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In this number

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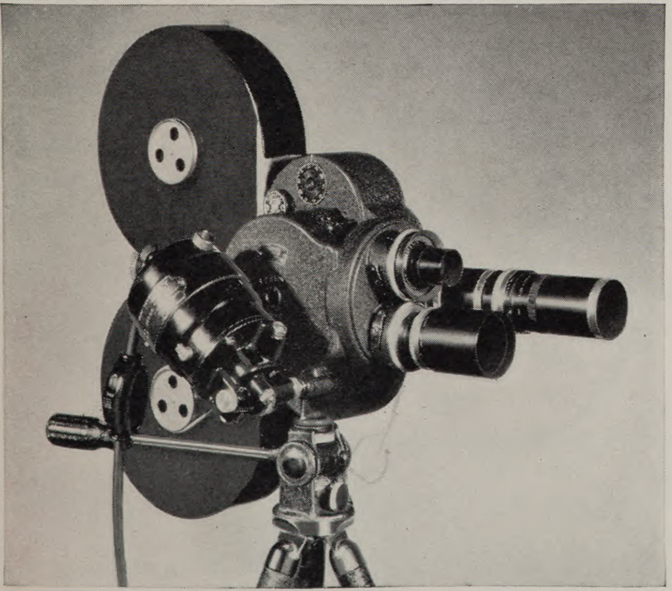

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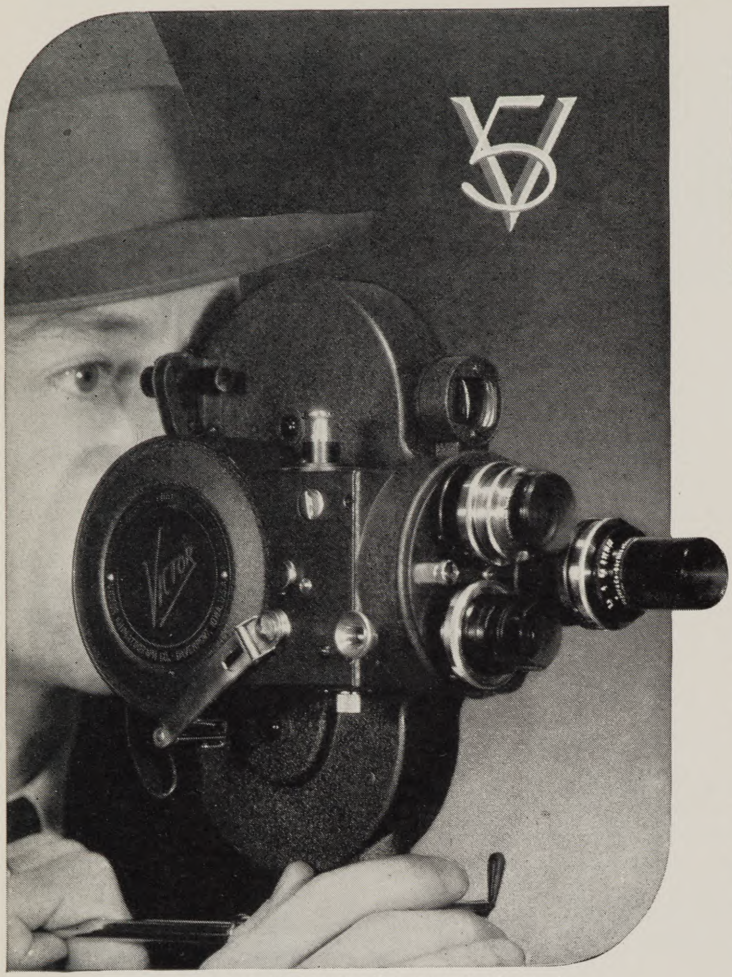

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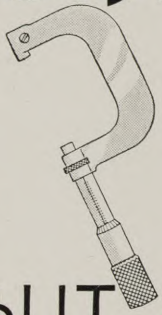

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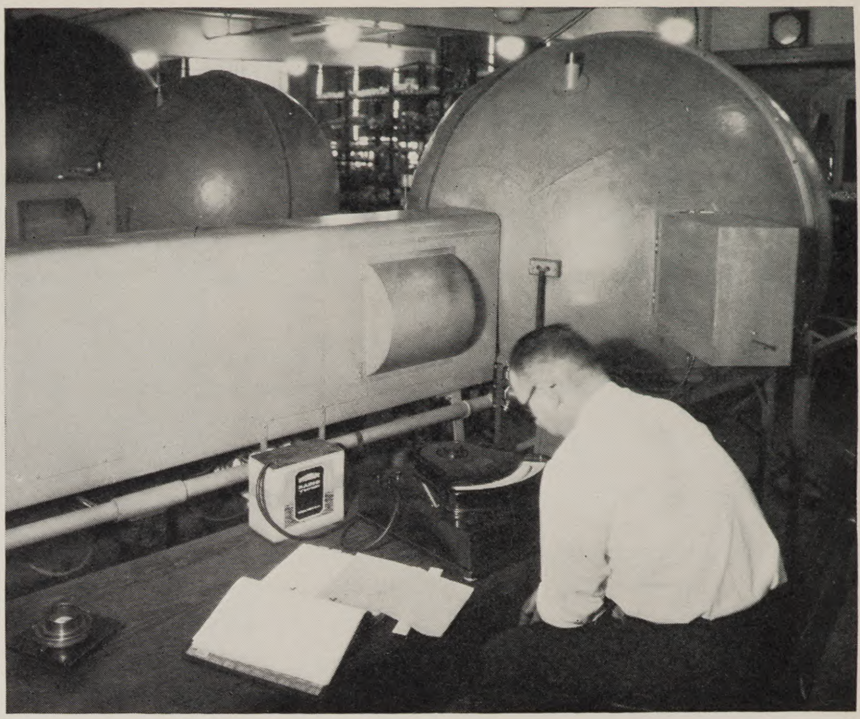

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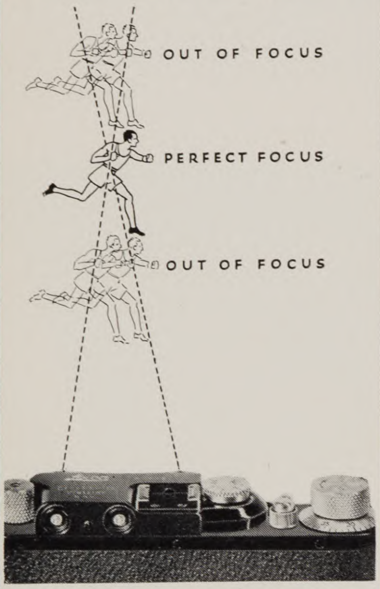

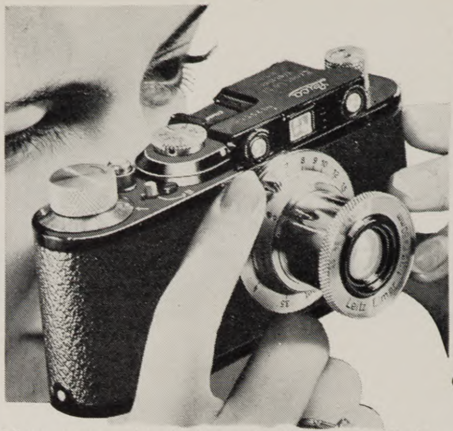

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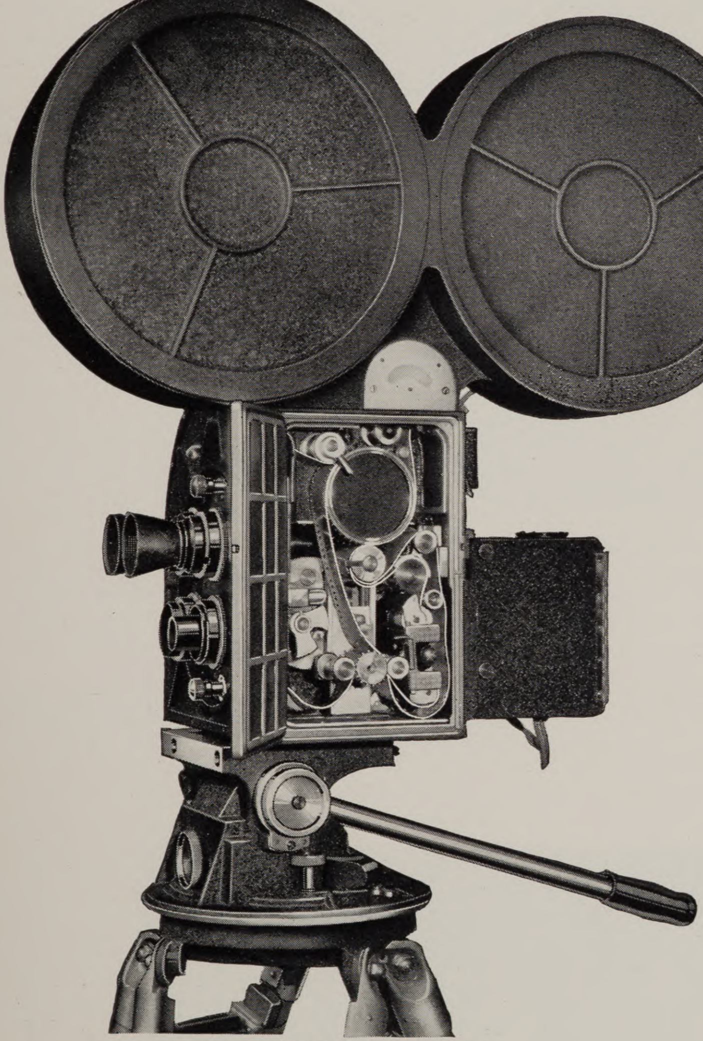

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Imagination in Set Design

by **GORDON WILES**

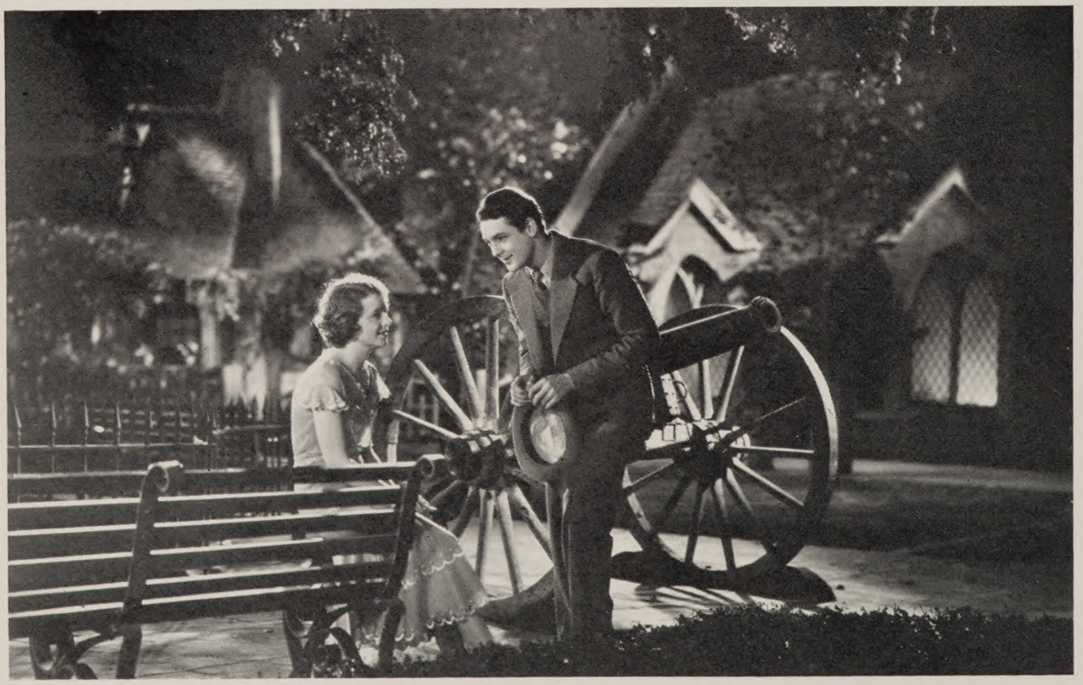
Art Director, Fox Studio

ONE of the most interesting problems in set design that I have encountered in recent years was the creation of a complete middle-western village for William K. Howard's production of "The First Year." It interested me, not alone because of its artistic possibilities, but because it so completely exemplifies what set-design and the set-designer may mean to a motion picture production. For in designing this set, I was from the outset confronted with questions that involved not only the obvious artistic considerations, but the story, direction, photography and production management. All of these factors, naturally, enter into the art director's work to some extent at all times, but rarely do they appear so spectacular.

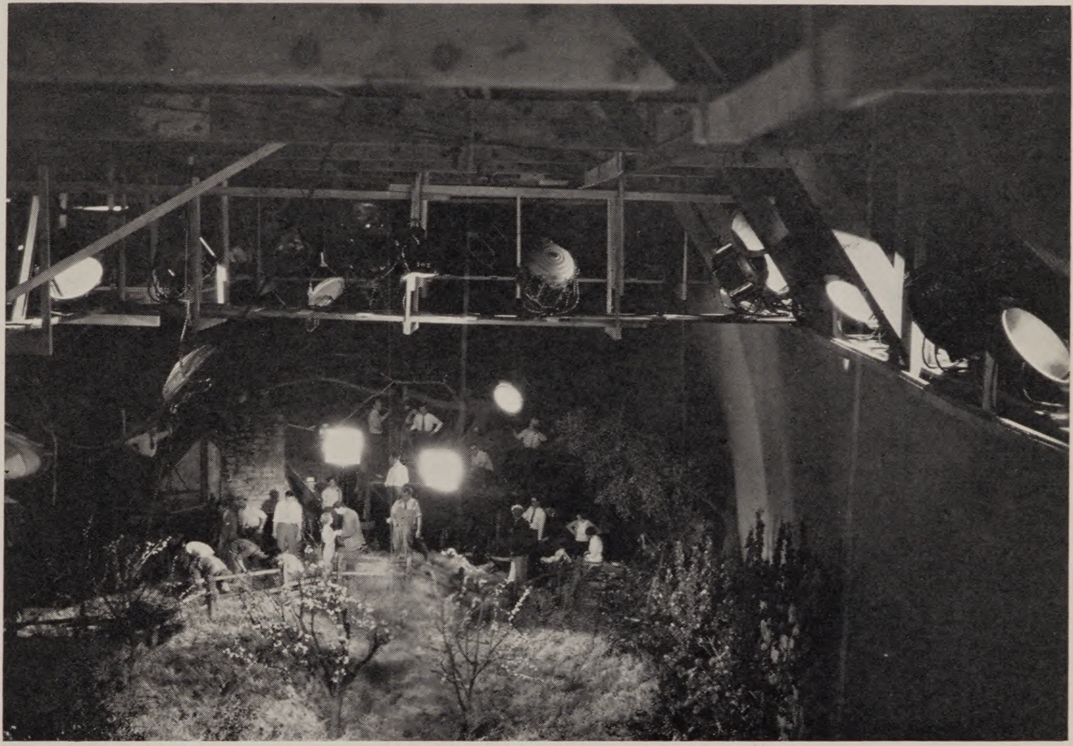
In the first place, I was to create a typical middle-western village to serve as a background for this latest Janet Gaynor-Charles Farrell story. That, in itself, gave a hint as to the treatment that would be required. Therefore, from the first I determined that my village should be idealistic rather than realistic. To gain this end, I conceived a village, not as it would actually exist, but as we would like to see it; the village of our childhood memories—with all the pleasant and picturesque recollections left in, and the unpleasant ones left out. I bore in mind, too, the fact that this production is to be shown in all parts of the nation; therefore, I borrowed touches from almost every part of the country, so that my village will in some part, strike a familiar chord in the memories of everyone, whether they live in Illinois, in Maine, or in Carolina. Since my design was to be idealized, I was at perfect liberty to do this.

The next question was solely one of production management. Since this village was to be the background of the greater portion of the dramatic action of the film, I must naturally arrange my sets so that adverse weather could not cause production delays. In most pictures, this detail can be arranged for by scheduling production so that in the event of bad weather, the company can retire to the stage for interiors; but here the village and its exteriors were to serve as backgrounds for both the exteriors and the interiors. It would be very difficult to separate the two satisfactorily. Therefore, I decided that the most logical thing to do would be to build the village, complete, indoors on one of the stages. This has proven the case, for although the picture went into production during a protracted spell of inclement weather, work continued on the stage, regardless of sun, rain or fogs without. The lighting of such a set—which completely covered two large stages—was a tremendous problem, but knowing the competent artists who were to photograph the picture, I had no fears on this score. During the production, Hal Mohr, A.S.C., the Chief Cinematographer, expressed his opinion of the set when he said, "Well, it's harder to work on—keeps me on my toes every second—but the results are worth it. I can control my lighting all the time—make morning shots at noon, or in the evening, just whenever we're ready to shoot them. Between your set and the control I have over the lighting, I can get exactly what is wanted, the way it's wanted, and when it's wanted."

Similarly, Director Howard approved of the fact, saying, "It makes it a great deal easier for me, for there are none



You might think this scene was shot out of doors. It wasn't, for it is an excellent example of an "exterior" constructed and photographed inside the studio.



Here we see an exterior setting that is inside the studio, with the lighting arrangement showing.

of the delays that would occur if we were trying to make these sequences outside—no waiting for light, no trouble with extraneous noises, nothing to keep us from going ahead and doing our work as fast and as perfectly as we are able."

The economic problem of the cost of lighting so large an indoor set vs. the cost of waiting for natural light was most interesting; but the record of the actual production is bearing out the conclusions we reached in our preliminary figures, which showed that the former method would be indisputably the more efficient.

Returning again to the purely artistic phases of the problem, a most absorbing phase was the part that such a set might potentially play in such a story. It is all too infrequently that such a situation occurs, for naturally, "the play's the thing"—and the setting can never be allowed to distract attention from it. But in this instance, the setting could legitimately play a part in the story. I designed it to do so, even as the little German village in "The Broken Lullaby" played such a part in that story. It was my intent to dramatize this typical American village just as Lubitsch did his typical German village. What the result will be, I do not know, for, being adapted from a stage play, much of the action which could easily be played in different parts of the village may still be enacted in the various rooms that had to serve for the background in the more inhibited stage version.

Here is a point in which the Art Director is in a position to be of double value to the production. Very few writers—even those long trained in motion picture work—are able to think in pictures; try as they may, they cannot escape the fact that words are their principal medium of expression; hence they think in words, not pictures. Directors, on the other hand, almost universally think in terms of action; and though this is a step forward, action is still far removed from pictures. Only the Art Director and the Cinematographer, of all the many individuals engaged in producing a picture, truly visualize things in terms of pictures rather than words or actions. The Cinematographer, unfortunately, rarely has an opportunity to bring his trained, pictorial mind to bear on a story until it is in actual production. The Art Director, on the other hand, must of necessity be consulted rather earlier, as the various sets must be designed, approved, and built well in advance of the actual shooting. The Art Director, therefore, can—if he will—be of invaluable aid in removing the taint of staginess from a script beforehand, and insuring that the result will be truly suited to the motion picture medium.

It is unfortunate that these two pictorially-minded workers are afforded so little opportunity for active cooperation. If camera assignments were made somewhat more definitely in advance, giving the Cinematographer at least a little time to formulate his plans for the pictorial treatment of a story, to collaborate with the Art Director in the final preparation of the sets, and with the Director in his final decisions as to the directorial and dramatic treatment requisite, I am confident that the results would more than offset the slight extra trouble and cost. The resultant picture would be more truly a motion picture, and more certainly a positive, homogeneous artistic unity than could ever be possible under the present system. The four most directly responsible for the finished product—the Writer, Director, Art Director and Cinematographer—would be working together, with a single mind and perfectly coordinated effort.

In the absence of such a desirable state of affairs, however, I, personally, try to do as best I can alone to insure the utmost pictorial value in the picture, and to insure the Cinematographer of truly pictorial material to work with. When I receive a script, I study it, naturally, with an eye to its pictorial possibilities. Then I break it down into a series of

(Continued on page 31)

Enter the Audiographer

by **L. E. CLARK**

LAST month, in an article appearing in this Journal, I pointed out that the sound man—largely due to his own apathetic attitude toward the artistic phases of picture-making—was steadily being relegated to the status of a mere skilled laborer. Instead of being the positive factor that he should be he is a mere accessory; important in his way, but no more to be consulted about the artistic and dramatic problems that are encountered than is the grips, the gaffer, or one of the lights. Since that article appeared, many sound men have discussed it with me. All of them, while deploring the truth of the matter, have felt at a loss as to the solution of the problem.

The solution, however, lies close at hand. Find some means of awakening the sound man from this lethargic attitude to the realization that he is in the motion picture business, and that, being in that business, he must become picture-minded, and half the battle is won. I am confident that the individual and collective ability of our sound men is sufficient—once it is directed into the proper channels—to bring the sound man the recognition he deserves, and (which is vastly more important) to be of very positive aid to the industry at large.

The question, of course, is how to bring this about.

The answer lies under our very noses. For when motion pictures were young, the cameramen were confronted with the identical problem. They have solved it by organization. From the very first, they have had their clubs, founded and maintained for the express purpose of promoting an active interchange of ideas and methods, and for directing and centralizing the efforts of cameramen—individually and collectively—along lines that would benefit both the camera profession and the industry as a whole. The culmination of all of the many such cinema camera clubs that have existed throughout the years is the American Society of Cinematographers. This purely social and academic organization is today one of the most influential bodies in the motion picture world. Its influence is felt throughout the world, oft-times in quarters far removed from the camera profession itself. As a result, the cinematographer—individually and collectively—is not alone a vital factor in the making of each production, but in the industry as a whole. The contributions of the A. S. C. to picture-making are too many and too diverse to be recounted here; suffice it to say that the whole world regards this organization as the fountain-head of authoritative information on every subject pertaining to cinematography—either as an art or a science—while the producers respect it for its innumerable constructive contributions to the business of making motion pictures, which have saved them millions of dollars, and played a great part in making American pictures supreme throughout the world.

A similar organization of sound men could be of equal importance. It would, in the first place, bring the leading sound men of all of the studios together for the purpose of exchanging ideas and bettering their work. It would focus their thoughts away from the merely mechanical phases of their work to the broader field of sound-recording as a definite part of motion picture making. It would inevitably bring forth definite, constructive steps that would be of immense value to the industry.

In forming such an organization, we have before us the example of the A. S. C., and, I am sure, the whole-hearted cooperation of that organization. Let us examine the structure and activities of the A. S. C. It is composed, in so far as its active membership is concerned, of cinematographers: not engineers, not executives, not assistants, but men who have definitely proven themselves capable of photographing the greatest productions—men who have proven themselves outstanding both as technicians, artists and motion picture makers; in brief, cinematographers. Membership is solely by invitation, and is zealously guarded as a safeguard to both the Society and the Industry. Associate Membership has been conferred in a few instances upon others who, though not actually cinematographers, have nevertheless made outstanding contributions to the progress of cinematography as a science or as an art. Honorary memberships—the Society's proudest honor—have been bestowed upon those three great pioneers upon whom all of modern cinematography rests: the late Thomas A. Edison, the late George Eastman, and Albert S. Howell.

Largely by means of these high standards, the members of the Society have been elevated from the class of mere cameramen to the dignity implied by the title of Cinematographer. They have won this distinction by virtue of their achievements, and in consequence, are thereby spurred on to greater achievement.

By virtue of its structure, in which the practical, the scientific and the artistic are so skillfully blended, the American Society of Cinematographers is in a position to do a great deal for the professional betterment of its members, and to further the industry as a whole. By its frequent meetings, the members are enabled to conveniently gather and exchange ideas concerning their work, their methods and their individual problems. By virtue of its membership, the Society is in a position to bring incalculable resources to the solution of the problems of the individual members and to the many technical and artistic problems confronting the industry. Its research committees are constantly at work on the various cinematographic problems of the industry, for the solution of which they have incomparable resources.

The creation of a similar body among the sound men could not fail to be of vast benefit to both the individual soundmen and the industry. In organization, such a Society should in a great measure parallel the Cinematographers' organization. Even as the latter is composed of the outstanding members of the camera profession—men who are more than just cameramen, but Cinematographers, so should this Society be composed of men who are more than just sound men. The requirements should restrict the membership to the men who are actually responsible for recording pictures, just as the membership of the A. S. C. is restricted to the men who actually photograph pictures. And, as a title for these Cinematographers of Sound, why not coin the word, "Audiographers"? Derived from two Greek words, it signifies "writing with sound"—which is certainly comparable to the meaning of the Cinematographers' designation, "writing with motion."

Such an American Society of Audiographers would have three primary results. In the first place, being composed of and controlled by the men actually in charge on the set—the Audiographers—it would serve to awaken the sound personnel to more acute picture-consciousness, and divert their thoughts from the purely technical phases of sound upon which they now dwell to a consideration of sound in its true perspective, as a vital mechanical and artistic part of motion pictures. Secondly, it would give each individual sound

(Continued on page 50)

Why Blondes?

by **JAMES BARKER,**

Head of Makeup Dept., Fox Studio.

PARTLY by reason of their profusion, and partly by reason of the exaggerated publicity that attaches to anything connected with motion pictures or Hollywood, the very many young women here in the motion picture business who have seen fit to alter the coloring of their hair have, as a class, become internationally known. Most particularly, those who have chosen to bleach their hair have become publicized as "Hollywood Blondes"—and persistently lampooned by many writers here and elsewhere.

But, in common with many of the other unusual and sometimes strange-seeming customs of the motion picture world, this practice of hair dyeing and bleaching has, in the case of picture-people, a very sound business reason behind it. And this reason is neither vanity nor a desire for publicity. It is simply the desire to become a success; an emotion which is common to all workers, in any field of endeavor. To explain why this creditable ambition has taken this particular form, we must analyze the motion picture business itself.

Insofar as the actor is concerned, the motion picture business is one of selling personalities. And since Hollywood is the center of the world's motion picture industry, it naturally follows that the competition is tremendously keen. Inevitably, every imaginable aid must be employed to make each personality as positive and as vivid as possible, for the only way to stand out from the crowd, or, once out of it, to stay there, is to be as vivid a personality as is possible.

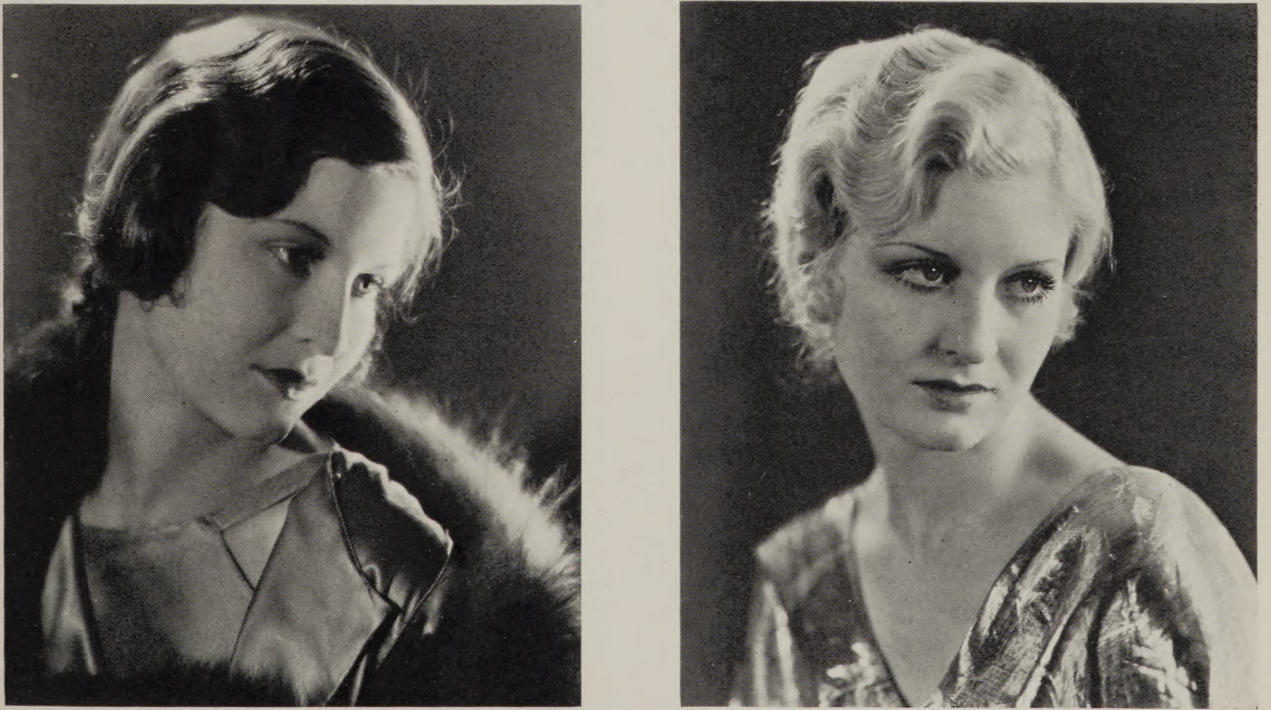
Moreover, for motion pictures, one must not be merely personally effective, but photographically so. We have all known people—men and women alike—who are personally extremely interesting, even arresting, but who do not "register" photographically. In motion pictures, such people cannot succeed. Unlike people in every-day life, or even upon the stage, they do not play to living people, but to the camera. And to impress the camera, they must meet its qualifications.

The first of these, of course, is a certain regularity of contour. The second, an even quality of complexion. The third is distinctive coloring.

Many deficiencies in the first two categories can be remedied by means of makeup. The third must be remedied by wigs, which are satisfactory only when perfectly made and applied, or by altering the color of the hair—by making the hair up, as it were. This is exactly what is done by the various dye-packs and bleaches so commonly used.

But this still does not answer the question as to why this is so universally done. The answer is simple enough; insofar as photographic effectiveness is concerned, there are but two positive shades—those that are definitely blonde, and those that are definitely brunette. Unfortunately, whatever providence it is that governs the pigmentation of human hair does not appear to be photographically-minded, for the invention of the cinematograph has not prevented thousands of potential actors and actresses from being born with all of the several dozen other intermediate shades which photograph negatively. So the obvious thing is to alter the coloring of the hair to one of the distinctively photogenic shades.

This reason applies alike to the extra-girl and to the star. The extra-girl, if she is to succeed, must make the most of her personal appearance. She must be a visually distinctive per-



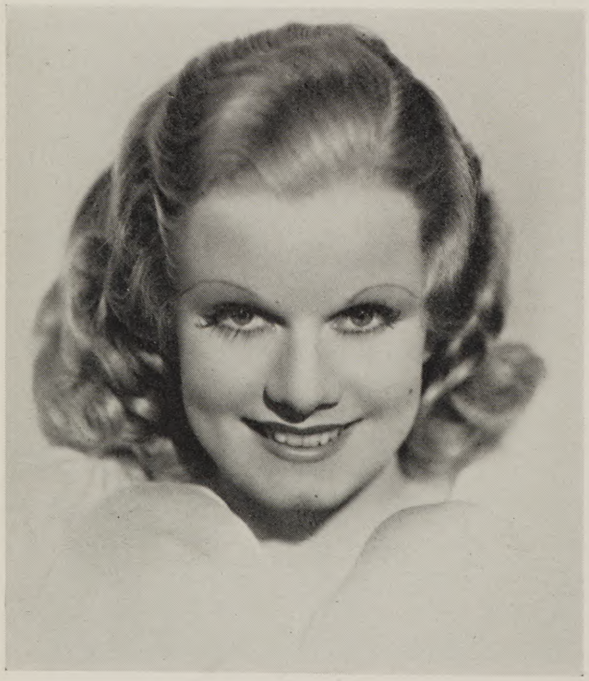
Note how the hair bleach renders Janet Chandler's personality more positive

sonality if she is to be picked out of the crowd and given a "bit"; and she must be at the same time photographically a distinctive personality so that, having once achieved her "bit," she may register sufficiently positively that the "bit" remain in the picture. Once she has achieved this much, and reached the small part stage, she must still be both visually and photographically a positive personality: she must be sufficiently vivid personally to impress the casting directors she interviews, and be remembered for future parts; she must be photographically effective so that she may register strongly in these parts.

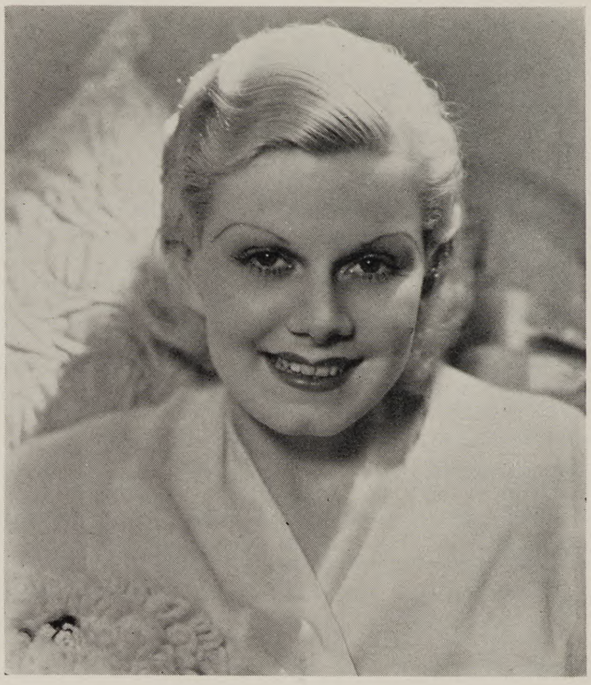
As I have said, the same reasoning applies to the stars. Having once gained stellar prominence, they must exert themselves to hold what they have won. They must be continually at their best personally, for wherever they go, whatever they do, they are always more or less in the public eye—and, to be successful, they must remain so, and favorably so. On the set, they must be more effective photographically than ever, for upon them rests the burden of much of the picture. Furthermore, they have an additional reason for seeking the maximum of photographic positivity in that every extra, every small part player, and every supporting player is in competition with them, and exerting every effort to impress the camera.

Therefore, in both cases, the player must make the most of her hair. She must not only arrange it in the most effective manner, but have it colored in the most effective shade. For this reason it is that we see so many henna-redheads and peroxide-blondes in pictures: these two treatments produce the shades that combine the maxima of visual and photographic effectiveness.

From the strictly photographic standpoint, these two shades are the most desirable because they offer the cinematographer the greatest opportunities for effective lighting. Normal brunette hair, or hair that has been dyed black, photographs well enough in a straight front light, but does not take so kindly to backlighting. Henna-red hair, on the other hand, will photograph dark, but allows a far more effective use of backlighting. In addition, some of the lighter tints obtainable by this method closely approximate (photographically) the intermediate shades of brown and chestnut, with the added advantage of being photographically positive; alive, not dead.



Miss Harlow wearing the red wig used for a recent part



Jean Harlow with her natural blonde hair

Bleached blonde hair enjoys the same advantages: it is tremendously effective photographically, particularly under back-lighting. It sets a player off particularly well in scenes with men, most of whom have hair that is either dark or of a less positive shade. And it generally adds force and distinction to a woman's personality, either on or off the set. Can you imagine Mary Pickford, or Ann Harding with dark hair? An excellent example of the effectiveness of blonde hair is noticeable in Constance Bennett and her sister Barbara. Both are unusually beautiful women, and both are capable actresses; but Constance is a decided blonde, while her sister has brown hair, which, though attractive, is not at all effective photographically. Both had equal chances when they started in pictures, though Barbara Bennett chose to marry, and retire after appearing in a few pictures. But—the blonde sister "clicked" from the first, while her sister with the less effective hair failed to register so well.

The means used for producing these various changes of color are generally henna packs, in the case of the reddish shades, and bleaches, in the case of blonde hair. Neither of these processes are, if carried out by competent operators, injurious to the hair. There are certain types of hair, of course, whose texture does not permit such treatment; but experienced and reputable operators can easily recognize these,—and for their own protectiton as well as the client's—will invariably refuse to attempt any operations which might prove injurious. Therefore, I cannot too strongly urge that such treatment never be attempted by the individual, nor entrusted to any but the most capable operators.

In some few cases, bleaching—especially if inexpertly done—may tend to destroy the natural protective oil of the hair. In such cases, though the bleach may prove successful, it is dangerous to attempt to wave the hair, for the application of heat to hair robbed of these protective natural oils dries the hair excessively, makes it brittle and unmanageable—and often breaks its structure. In such instances, the only possible means of securing more effective hair coloration is by the use of a wig.

There has been, unfortunately, a good deal of prejudice against the use of wigs for motion picture work. How-

(Continued on page 41)

The Duplication of Motion Picture Negatives

by J. I. Crabtree and C. H. Schwingel
Communication No. 488 from the Kodak Research Laboratories

I. INTRODUCTION

THE UNSATISFACTORY quality of many of the duplicate motion picture negatives produced to date has been due partly to the use of unsuitable film emulsions for their preparations, and partly to a lack of understanding of the conditions under which good duplicates can be made.

A good duplicate negative is one capable of giving a print which is a facsimile of a print made from the original negative. It should reproduce accurately the tones of the original negative unless the contrast range has been modified to correct some fault. Also, the definition and the graininess of the duplicate should be of the same order as those of the original.

Heretofore no extensive survey has been available for the purpose of choosing the best photographic material and processing technic for the production of good duplicates. In an article entitled "The Duplication of Motion Picture Negatives"[1] by J. G. Capstaff and M. W. Seymour, the use of Eastman Duplicating film (emulsion series No. 1503) was advised for both master positive and duplicate negative, both being developed to a gamma of unity.

Following this article, C. E. Ives and E. House[2] published additional notes and precautions necessary for the production of good quality duplicate motion picture negatives utilizing the above procedure.

The results obtained were very satisfactory with regard to quality and tone reproduction, but the graininess of the exhibition prints left much to be desired.

It was stated by some laboratories that better results with respect to graininess were obtained by making the master positive on motion picture film with lavender support developed to a high gamma, and the duplicate negative on par-speed negative film developed to a correspondingly low gamma.

Early in 1929 two new films were put on the market for use in duplicating. They were Eastman Duplicating Positive film with lavender support (emulsion series 1355) and Eastman Duplicating Negative film (emulsion series 1505). These films were recommended as being more suitable for duplicating purposes than the 1503-1503 combination. Emulsion 1505 was faster than 1503, and with emulsion 1355 it was possible to print under the same printer conditions as with Motion Picture Positive film.

In an article entitled "The Graininess of Motion Picture Film"[3] one of the authors showed that the graininess of a positive print increased with increasing density of the negative from which it was printed. He also pointed out that the graininess of a positive printed from a negative developed to a higher gamma was greater than that printed from a negative of the same density contrast but which was developed to a lower gamma.

With these facts under consideration and in order to determine the most sensitive material and processing technic for duplicating purposes, the present investigation was undertaken.

II. METHOD EMPLOYED FOR DETERMINING A SATISFACTORY DUPLICATING PROCESS

More than 200 separate tests were required for the purpose of finding the most suitable procedure to follow in the making of good duplicate motion picture negatives. Each test consisted of the printing of a master positive from the original negative and then printing a duplicate negative from this. In all cases the duplicate negatives were made with a printing contrast equal to that of the original negative. The contrast of the duplicate negative was judged by the degree of development required to produce a print of given contrast. Each test embodied some change in the process, either in the sensitive materials, the developers, or processing technic employed.

Matched exhibition prints on Eastman Motion Picture Positive film were prepared from all original and duplicate negatives and these were compared on projection, the measure of graininess being taken as the ratio of the distance of the observer from the screen to the vertical dimension of the screen. By distance from screen is meant the minimum distance at which graininess was not apparent to the eye with the line of sight normal to the screen at its lower edge.

It is true that the distance at which graininess was zero varied with the observer, but comparisons have shown that the variation was not more than 10% between individuals having normal eyesight. A greater accuracy cannot be expected and this method of comparison seemed satisfactory from the standpoint that quality and graininess were compared under practical projection conditions. The screen size was 43 in. by 57 in. with a screen brightness between 10 and 11 apparent foot candles. The projector was operated at a speed well above that at which flicker was noticeable.

The standards used for comparison were prints made from the original negatives, and new standards were made for every series and at all other times when the processing needed to be checked.

Gammas reported in this work were determined from sensitometric strips made on the film under discussion and exposed in the printer. These sensitometric strips were processed along with the master positive or duplicate negatives. All densities were measured on a Capstaff densitometer.[4]

A. Sensitive Material

An emulsion suitable for duplicating must fulfill the following conditions: (a) The emulsion must have sufficient latitude to permit the correct reproduction of the greatest scale of tones likely to be met with in the original negative; (b) it must have the ability to reproduce fine detail, otherwise a serious loss in picture definition will occur; (c) the developed image must have a minimum graininess, otherwise the cumulative effect in making the master positive and duplicate negative will produce excessive graininess in the exhibition print; (d) it must have sufficient speed to permit of printing the master positive or duplicate negative without extensive modifications of the printer optical system.

The emulsions listed below were among the eighteen different emulsions tested which showed the most promise of being suitable for duplicating purposes. Only the data relative to these will be given and discussed in this article.

Emulsion Series Number	**Film**
1302	Eastman Motion Picture Positive Film, Lavender Support.

1355	Eastman Duplicating Positive Film, Lavender Support
1503	Eastman Duplicating Negative Film, Yellow Dyed.
1505	Eastman Duplicating Negative Film, Yellow Dyed.
1201	Eastman Negative Film.

B. Original Negatives

The original negatives chosen for this work were of average density contrast. Since graininess is most apparent in the lighter tones, such as the face and other uniform areas of low density, the scenes selected were principally close-ups.

C. Type of Printer Employed

The master positives, duplicate negatives, and exhibition prints were printed on a Bell & Howell continuous printer which had been tested and approved as giving good definition. It was found to be very important that the films be in uniform contact over the entire area of the printer aperture, otherwise a patchy, uneven image was produced. To test the printer for uniformity of contact, a print was made from a strip of evenly fogged and developed negative film. Perfect adjustment of the printer was indicated by an even density in the print, while imperfect adjustment gave the patchy unevenness referred to above. The printer was also tested for steady operation by exposing a length of positive film in the printer, without a negative, and then examining it for unevenness after development.

D. Processing Methods

Several methods for processing the films were used, including (a) rack and tank, and (b) continuous machine. There appeared to be no difference in the graininess of the images obtained by the different methods, although machine processing gave the most uniform results.

Too much emphasis cannot be placed upon the necessity for good development technic. It must be remembered that the production of a final print in a duplicating process requires four distinctly separate development operations, and since all defects are cumulative, these defects will be greatly magnified in the exhibition print. It is the accumulation of the small defects and errors which give the "duped" appearance to prints made from unsatisfactory duplicate motion picture negatives.

E. Developers

In addition to such standard developers as formulas D-16 and D-76*, a large number of developers of special composition were also tried.

Only the experimental results obtained from the use of two of these special developers will be given. The formulas will be known as Special Developers No. 1 and No. 2. Developer No. 1 contained potassium iodide and Developer No. 2 was one capable of giving high contrast.

III. DISCUSSION OF RESULTS

Table I contains the data relating to the emulsions tabulated above. All the duplicate negatives listed were made so as to have the same printing contrast as that of the original. The contrast of the duplicate negative was judged by the degree of development required to produce a given contrast in the positive from it.

A. Results Obtained with Various Emulsions in Which Both Master Positive and Duplicate Negative were Developed to a Gamma of Unity.

Tests Nos. 1 to 4 inclusive and No. 12 (Table I) were for the purpose of determining the effect of varying the type of duplicating emulsion on graininess and quality. All master positives and duplicate negatives in these tests were developed in D-76 developer to equal degrees of contrast (gamma 1.0).

From the data it will be seen that emulsion 1503 produced images with less graininess than the faster duplicating emulsions 1505 and 1355. The quality was good in all cases except that of test No. 3, where the loss occurred in the master positive. The reason for the poor quality in the master positive was that the low densities were printed too low on the density scale and, therefore, the highlight densities were printed in the region of underexposure.* It was found necessary with emulsions 1503 and 1505 to print to a minimum

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TABLE I

(Print from Original Negative - Graininess Ratio= 5.4)

No.	Emulsion Number	Developer	Gamma	Minimum Density	Emulsion Number	Developer	Gamma	Minimum Density	Quality	Graininess
1	1503	D-76	Approx. Unity	0.45	1503	D-76	Approx. Unity	0.40	Good	7.5
2	1503	D-76	Approx. Unity	0.40	1503	D-76	Approx. Unity	0.62	Good	7.8
3	1505	D-76	Approx. Unity	0.20	1505	D-76	Approx. Unity	0.42	Fair	8.1
4	1505	D-76	Approx. Unity	0.50	1505	D-76	Approx. Unity	0.45	Good	8.4
5	1355	D-16	1.52	0.30	1505	D-76	0.69	0.50	Good	6.5
6	1355	D-16	1.52	0.30	1503	D-76	0.69	0.50	Good	6.7
7	1355	D-16	1.85	0.30	1505	D-76	0.55	0.25	Very Good	6.3
8	1355	D-16	1.98	0.40	1505	D-76	0.52	0.25	Fair	6.3
9	1355	Special Dev.No.1	1.61	0.28	1505	D-76	0.62	0.40	Very Good	6.7
10	1355	Special Dev.No.1	1.62	0.51	1505	D-76	0.61	0.37	Good	7.0
11	1355	D-16	1.60	0.50	1505	D-76	0.60	0.45	Good	6.7
12	1355	D-76	1.05	0.51	1505	D-76	1.00	0.50	Good	8.3
13	1355	Special Dev.No.2	2.02	0.21	1505	D-76	0.50	0.42	Good	7.5
14	1355	Special Dev.No.2	2.04	0.50	1505	D-76	0.50	0.40	Very Good	7.2
15	1302	D-76	2.00	0.50	1201	D-76	0.50	0.45	Fair	7.9
16	1302	D-76	2.00	0.50	1505	D-76	0.50	0.42	Fair	8.1
17	1302	D-16	2.62	0.30	1201	D-76	0.38	0.30	Fair	6.5

The Transparency Projection Process

by **FARCIOT EDOUART**

Head of Transparency Department, Paramount Studio

THERE has been of late a good deal of misinformation abroad concerning the nature, the effects and the purpose of projected background or transparency cinematography. It is the purpose of this article to attempt to correct some of these prevalent misconceptions.

The mechanics of this process are comparatively simple. Essentially, the process consists of the use of a translucent screen of large dimensions as a background for action photographed in the studio. Upon this screen is projected (from the rear) a strip of motion picture film, supplying any desired background—moving or stationary. The projector and the photographing camera are electrically synchronized so that the shutters of both open and close at the same time, with the result that the image cast by the projector is photographed as a background to the actual action taking place in the foreground. The process was made practical only by the introduction of the high-powered projection apparatus developed for wide film, and by the introduction of supersensitive film. It has during the past year come into general use in practically all of the major studios as a highly important adjunct to the production of all types of films; scarcely a picture is released by any such major producer which does not include at least two or three such scenes—and some few productions have used this process to make 75 or 80% of their total footage.

The effects obtainable by this process are practically unlimited. The most obvious application, of course, is for getting close shots of people in moving automobiles, airplanes, motorboats, yachts, steamships, trains, and the like, or for securing animated backgrounds for scenes in which the players appear to be in some distant or inaccessible locality, or under conditions where either recording or photographing in the normal manner would be either difficult, impractical, or impossible.

But the use of this process does not end here; it may be —and frequently is—used to secure scenes and effects which would be perfectly obtainable in the normal manner. Its advantage in such application lies in the fact that greater control is possible, with less expense, less effort, and greater certainty. In one recent production made by the Paramount Studio, for instance, an important sequence was laid in a house over-looking the seashore, with the seacoast, including a harbor, surf, etc., visible through large windows. Such scenes could, obviously, have been made in the usual manner by selecting a suitable location and building there a set, transporting the company, with full photographic, lighting and sound equipment thereto, and photographing the scene in the conventional manner. Instead, however, it was done on the Transparency stage at the studio. The advantages were many, and of benefit to every member of the company. The studio was saved the expense of finding a location and constructing its set there, of transporting the company, with its personnel and equipment, thither, and of the inevitable delays in production that result from the natural circumstances which invariably hamper the cinematographer and recordist on such locations. The personnel of the unit were spared the discomforts of a location trip, and were able to live in their usual surroundings, working in their usual manner upon the studio stage. The recordist was benefited by the absence of untoward acoustical surroundings and by the absence of any unwanted noises. Most important of all, the cinematographer was enabled to secure a more perfect photographic and artistic balance between his foreground setting and action and the background, with perfect control over both.

In another recent production we used the transparency process in order to secure a perfect night-effect exterior scene, with the moonlit ocean as a background. This would have been impossible to obtain in the normal manner. Moonlit night-effects are, as is well known, very effectively made in sunlight by the use of proper filters; on the other hand, these same filters alter the photographic rendition of colors, making the foreground and figures appear unnatural—often to the point of failing to match up with other scenes employing the same setting, costumes and properties, while they so alter the rendition of flesh tints as to make it all but impossible to match the makeups of the day and night scenes. Furthermore, in making such a sequence in the normal manner, the problem of lighting the foreground would be both difficult and expensive.

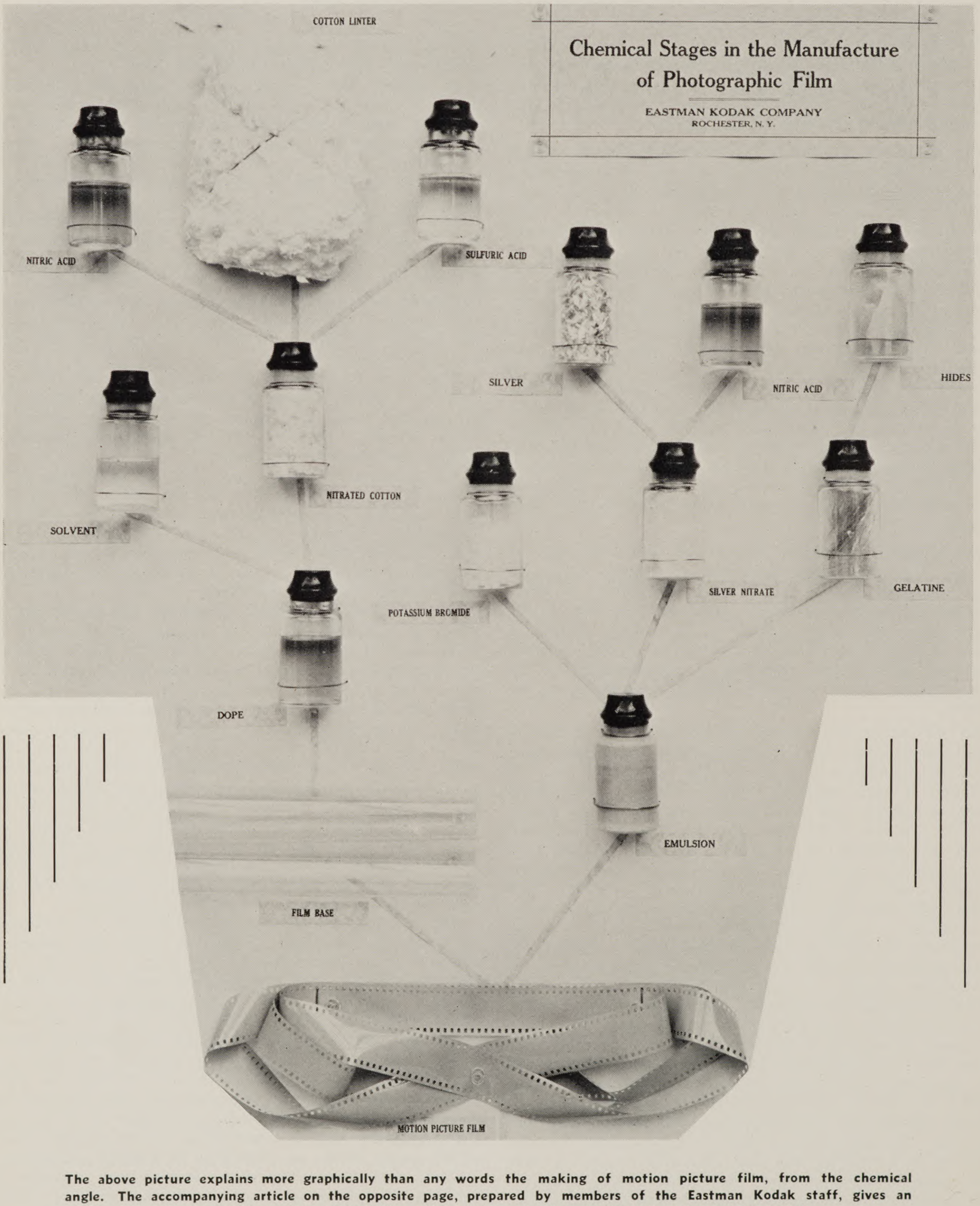
From these examples, it will easily be seen that the transparency projection process is not alone a highly useful trick process, but even more useful for saving time, effort and money in many instances where the scene could possibly be made in the conventional manner.

The question therefore arises: what is the purpose of the transparency process? Is it a process which will do away with locations, with settings, and even with the production cameraman? The answer must be, no. Those of us who know the most about this process, who have used it and developed it, must be the first to admit its limitations, no matter how boldly we set forth its advantages.

The transparency projection process is, first of all, not primarily a trick process. It has its uses, of course, in this field, for with it many effects are possible which could not be obtained by the use of miniatures, optical printing, nor any of the established travelling matte or other trick processes. But this use is, to my mind, of only secondary importance. The prime value of the transparency projection process lies in its utilization as a supplement to normal cinematography. As the various examples cited will show, transparency cinematography can be used to secure many effects actually possible by ordinary methods; its advantage lies in the fact that it will secure these efforts better, more quickly, and more easily than they can be obtained by straightforward cinematographic methods. By its use, time, effort and money are saved, and the desired effects can be obtained with more absolute control than by straight cinematography.

The technical requirements for transparency cinematography are simple, but exacting. In the first place, the background plates must be photographed from exactly the right viewpoint and angle to give the composite scene the desired perspective. They must, moreover, be photographed in a camera which is absolutely perfect—rock-steady to the ten-thousandth of an inch, and free from all optical or mechanical aberrations. They must be photographed especially for this work; odrinary production or stock-shots are unusable for background plates. I recently inspected over ten thousand feet of film offered as possible background plates for a forthcoming production; due to unsteadiness in the camera used—which would hardly be noticeable in ordinary production—I found that almost the entire footage was worthless for my purpose; out of the ten thousand feet of film, I found two scenes—a total of less than fifty feet—which might possibly be usable.

(Continued on page 39)



The above picture explains more graphically than any words the making of motion picture film, from the chemical angle. The accompanying article on the opposite page, prepared by members of the Eastman Kodak staff, gives an interesting description of the film making work. Another installment appears next month.

Motion Picture Film

In the Making

IN SUNNY Southern fields "darkies" sing as they pick cotton. . . . Steamers chop through the long ocean miles bringing saltpeter from Chile. . . . Sulphur comes to the surface in Texas. . . . Japanese with broad straw roof hats prepare camphor for shipment in Formosa. . . . Lumbermen harvest mighty trees and alcohol is distilled from the waste wood that is too small for lumber. . . . Participants in a successful theatre industry dine on roast beef while the hides from beef are only beginning their industrial career. . . . Mexico, land of the conquistadors, yields the silver valor dared for. . . . Methodical extractors derive potassium bromide from Great Lakes brine deposits. . . . A flash in the witches' cauldron of the photographic industry and film is produced.

But the witches who conjure up several hundred thousand miles of magical ribbon every year wear no conical caps nor ride broomsticks. Change the picture to patient, alert engineers, skilled by long training in meeting rigid standards of accuracy; veteran emulsion chemists whose technique enables them to offer their market 100 different types of film; research men who hold their jobs because they are able to know what the photographic public is going to want several years later and have it ready. No less capable combination of men could conduct an industry in which delicate laboratory operations have been magnified to huge mass production proportions, and conduct it so that the product is satisfactory and uniform.

Let's, as a party of men who make their livelihood using film, visit a plant where film is made—not by any means a hypothetical manufactory, but an entirely real group of more than 75 major buildings standing on 400 acres and manned by a force of 6,500 persons imbued with an equally real tradition of making and meeting the "raw stock" standards of the motion picture industry and the nation's photographers, day in and day out.

Entering from the busy highway, we find the grime and noise usually associated with manufacturing strangely missing. Here, instead, is a calm setting of stately elms, shrubbery, tidy lawns and ivy-clad buildings.

Scanning the figures for size, we shall relize that the industry confronting us is large in scale; but, in that, it is not distinctive from other huge enterprises—from an automobile factory, say, or a locomotive plant.

This film manufactory is dffferent, however, from any other industry in the fact that the scale of operations, the expense, the large personnel, all are concerned in an unrelenting fight against seemingly inoffensive enemies—a speck of dirt too small to be seen, a slight variation of temperature, a dim ray of light entering where it does not belong.

In subsequent instalments we may have an opportunity to examine in detail some of the elaborate, unending precautions taken in the permanent drive against these enemies. For the present, let's simply pass quickly through our typical film manufactory for a quick survey.

Trees and lawns fronting this film plant exist only in part to beautify the grounds. A barrier against dirt is the more important purpose. The six miles of street within the plant are paved, and are constantly sprinkled, to guard not against dust that is unpleasant but against dust that endangers perfect pictures. The chimneys that carry fumes and cinders 366 feet into the air, the fireless steam locomotives, the fleet of electric trucks, the constant use of scrubbing machines and floor waxing machines, the white laundered shirts worn in any building where film is uncovered, the employment of full-time cleaning crews, are not merely interesting innovations. They are part of a grim program that keeps this film plant perhaps the cleanest industrial area on earth.

We are using the term "film plant." It is not even necessary for this party of visiting motion picture projectionists to remember that a variety of photographic products is made here, since 35 mm. film for the motion picture industry is the object of their interest. Film for millions of snapshot cameras, nevertheless, is an exceedingly important product, comparable to motion picture film. It was a piece of amateur camera film from here that Edison had received when he said to his associates building a motion picture camera: "That's it. We've got it. Now work like hell."

Home movies—personal motion pictures—sprang from here and now form the equivalent of a large industry in themselves. Portrait and commercial photographers must be supplied, not with one type of film and paper, but with scores, to meet the various exacting needs of their work. Medical and dental radiologists diagnosing the infirmities of human anatomies, X-ray technicians examining the soundness of metals, of building materials, and of aeroplane parts, use a huge annual acreage of their recording medium.

Photo-engravers, bankers, astronomers, aviators, draftsmen, detectives, microscopists—a great variety of professions and activities have need for the photo-sensitive materials that this plant supplies. American consumption of photographic paper alone amounts perhaps to 4,500 acres annually.

Let our party take one of the passenger buses which depart every quarter-hour on routes that carry those with business, and may carry us as visitors, to the various factories and offices of this expansive area. The buses are a necessity, for there is a mile and a half of distance from the entrance gate to the remote buildings of the many that fit into the scheme of this city of well-seasoned brick and ivy.

Through streets flanked by high-walled buildings, our bus travels, passing wheeled and pedestrian traffic; but the trucks move more silently and the pedestrians walk more briskly than the traffic of a less purposeful city.

On one side we see a six-story structure, a block long, which we are told is built over a reservoir that holds 5,000,000 gallons of water and that is emptied and refilled three times every day the plant is in full operation.

Down one street we observe a solid masonry wall with no window breaking its expanse. Behind it, we are informed, great white machines with many precise moving parts are turning in dim light or none, coating the transparent, flexible film base with the emulsion.

Along another thoroughfare flanked by ivy-covered walls we catch a glimpse of an imposing structure which overlooks the entrance to our typical plant. This, our guide answers, is the research center—in truth a research university in the sphere of photographic science. From here has come knowledge enabling continual advances in the quality and performance of photographic materials, some heralded, some made without public notice. Here, too, have been discovered many hidden complexities of photographic sensitivity; and here, as well, numerous patient studies have been made that have given photography and the motion picture art a scope undreamed of when they first came into being.

(Continued on page 30)

HAL HALL

says

An Invitation

I SINCERELY hope that if any of our readers come to Los Angeles for the Olympic Games this month and next that you will not fail to visit us at our quarters in Hollywood. We shall be more than delighted to be of any service and trust that you will accept our invitation. And—if any reader wishes to have a mailing address where he knows his mail or telegrams will be kept safely for him, just use our office. Our telephone number is GRanite 4274. Our address is 1220 Guaranty Building, Hollywood.

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Reward

THERE is an old saying to the effect that "charity begins at home," which should be emblazoned upon the walls of Congress at Washington. It seems but yesterday that we were being called upon to provide money for the feeding of Europe's starving women and children—and but a short time ago that we were depriving ourselves of necessities in order to buy liberty bonds to provide cash to send across the water to help other people blow each other's bodies to tiny bits. And some of us (this writer included) were giving up opportunity for self advancement and rushing into the army, gladly willing to give our lives if necessary so that our country could hold its head up as proudly in the future as in the past.

And now, what! Thousands of American women and children are hungry and ragged—eating in soup kitchens and bread lines set up by private charity. Thousands of our American men who went "over there" and passed through a living hell of mud and filth and gas and shrapnel are unable to secure employment to keep body and soul together. And a Congress made up of men who do not know what it means to be unemployed or hungry refuses to give them what is justly theirs—the adjusted compensation which is so poorly called the bonus. These men are not asking for charity. They are asking for what they earned—some of them by losing a leg or an arm. And a group of Senators, overburdened with assumed dignity and with hearts as hard as flint, tell them, "No. " Tell them to go back home—but to what? To more hunger and suffering.

What a shameful sight to see those thousands of what once was the flower of our American youth, down there in the Capital of the richest country in the world—in rags—living off charity provided by citizens who are ashamed of the way their country is treating these men who offered up their lives when this same Congress saw fit to declare a war. How can these Senators who have refused to pay these former soldiers face the world without a blush of shame! They vote billions for strangers and pork barrel spoils—but they take one look at the thousands of ex-soldiers living in the mud flats of Washington under conditions that we would not impose upon a hog—and then after eating a big meal of expensive foods—tell these hungry men who only ask what is coming to them, virtually, to go to Hell. What a sweet condition! What an inspiration for the boys of today who may be the men who will be called upon tomorrow if there is another war!

Oh, where are those back-slapping promises given the boys as they were marching away to war! "Nothing will ever be too good for these heroes," I heard many times in those days. And now they are given thin soup and a leaky tent on a mud flat. God! Is this America! Is this Democracy!

The Amateur Contest

TIME flits rapidly by during the sunny summer months, so I take this opportunity of calling the amateurs' attention to the fact that only four more months remain in which to make a picture and enter it in the $1000.00 Amateur Movie Making Contest which this magazine is conducting. The contest closes at midnight of October 31, 1932. Any pictures mailed after that hour will not be eligible, so you who have planned to send in a picture should begin to get busy now so you will not be too late. And I would advise that you amateurs in foreign countries who are entering pictures, try to get them on their way as early as possible so there will be no chance of delay. Some pictures are coming from as far away as India. As it takes approximately a month for them to reach us, I think it would be wise to send them as soon as possible. Also send a letter notifying us that the films have been shipped. Then, if they do not arrive when they should we can start a tracer on them.

In answer to a flock of questions from amateurs, let me say that all films entered in this contest WILL BE RETURNED TO THEIR OWNERS. We do not keep any films after the contest is decided. They are kept in a fire-proof vault while in our possession, and the finest care is given them to assure their safety. Also, there is no limit to the footage of the films to be entered; and you may select any subject you desire. On another page you will find a list of the equipment prizes that will be given in addition to the $1000.00 in cash prizes. This is the greatest collection of prizes ever offered the Amateurs for 16 mm. picture making, and if you have not already entered a picture, you are passing up a fine opportunity for recognition and prizes. Better decide today that you have just as good a chance as the other fellow, and then send in your notice of entry and get busy on the film. Or, perhaps, you have a film ready which may win a prize. But, you had better start hurrying.

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Beauty On the Screen

THE following comment appeared in the Hollywood Herald of June 25, and seemed so worthwhile to this writer that we are passing it on to our own readers.

"For many years beauty, sheer pictorial beauty, was an important asset of the screen. Since the coming of sound the word has scarcely been used in vocabulary of either the makers or critics of the motion picture.

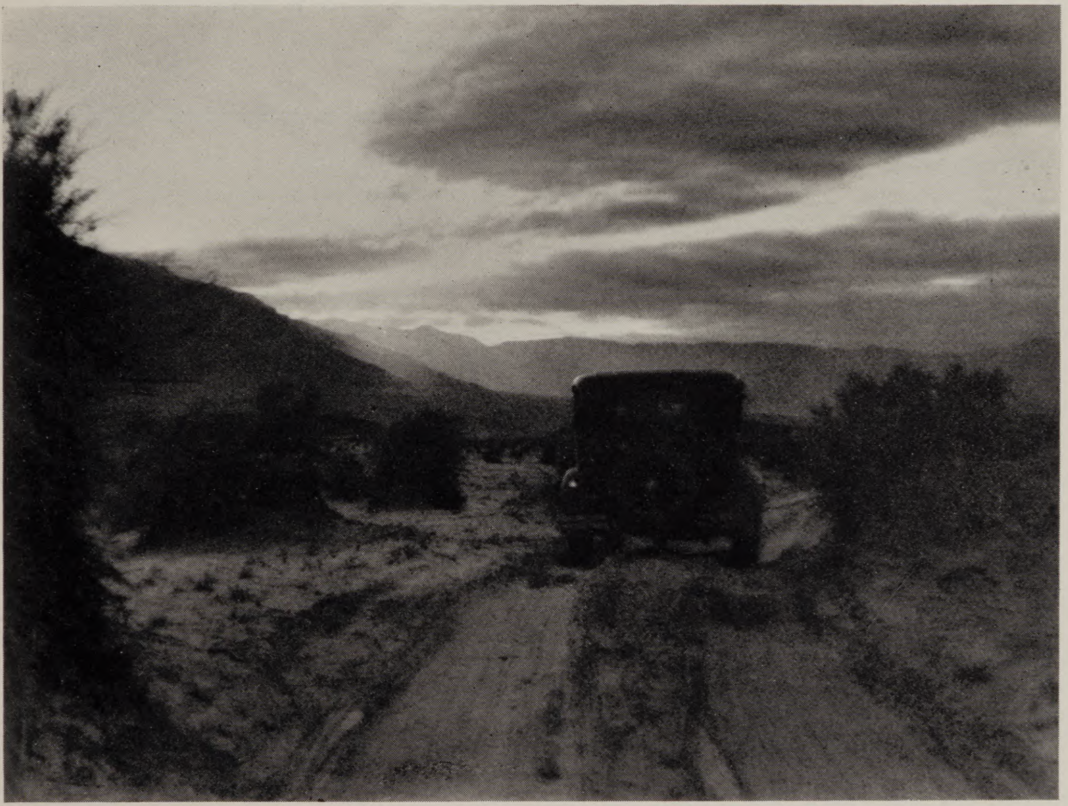
"Something considerably more significant, more sinister, than neglect and preoccupation is involved. The motion picture has become 'punch crazy,' in panting pursuit of speaking stage climaxes and the fussy business of wordy gags. It has been very considerably forgotten that the motion picture should still be made with the camera and that the microphone is an attachment, an accessory, both as a mechanism and as a tool of the art of expression. The word as thus far applied to the screen has vastly increased the motion picture's capacity for innuendo and salacity, but not even the stoutest defender of the current technique has ventured to sav that it has been used to enhance lure and glamour."

Rendezvous

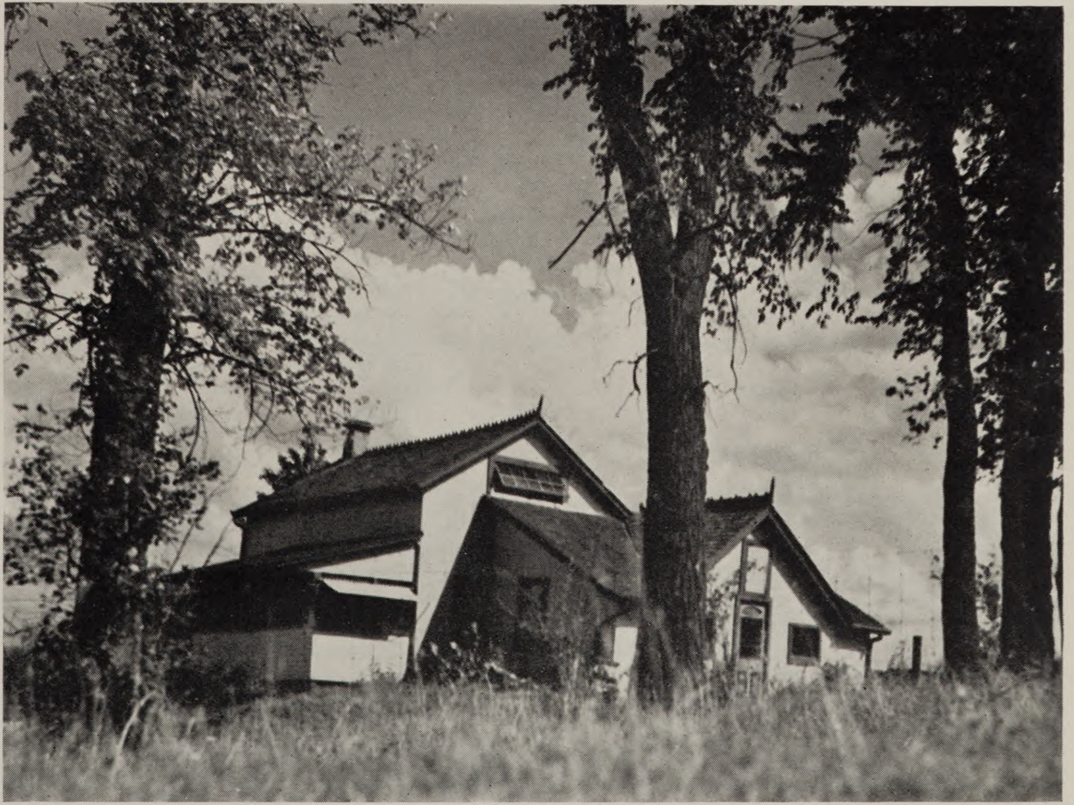
Frank Tanner

Picture Makers

Eugene Robert Richee



"Sun-down"—Death Valley **Clarence Slifer**



"Home" **Bruce Lindsay**

Concerning Cinematography

Critical Comments on Current Pictures

by **WILLIAM STULL, A. S. C.**

MARKED MEN

◆ Now and then one encounters a picture which is both entertaining and instructive. "Marked Men" is such a picture, for in addition to being an excellent "Western," it has been so capably photographed by Dan B. Clark, A.S.C., that it could well be used as a cinematographic text-book for amateur and professional alike. The greater part of the production was filmed in the Mojave desert, and these sequences are superb examples of the finest type of exterior cinematography. Every scene offers the cinematographer definite lessons in composition and filtering, and the few interiors that are intercut with these—especially the first interior sequence—display a type of effect lighting rarely seen in "Westerns." The last reel or two of the film, however, was made on the stock "Western Street" of the Universal "back lot"—and no amount of artistry could perfectly match it up with the location sequences. There is a lesson in this for producers who, appalled by the fact that they have spent perhaps a hundred thousand dollars or so on a production of this nature, attempt to save a few thousand by using stock settings already used and re-used. They save the cost of new sets that would match the remainder of the production, it is true; but at the same time, they rob the picture of a vast deal of "production value."

Still another fact proved by this production is that that exterior cinematography should be recognized as a highly specialized department; many a potentially fine picture has been ruined by someone's oversight of this cardinal fact. For a cinematographer may be a superb master of interior cinematography—lighting, composition and cinematics—but yet find himself utterly lost when on exterior locations. The reverse, likewise, is naturally true. Seldom—so specialized has cinematography become—does one find a man equally adapted to both the stage and the open spaces, as is Dan Clark. For, although Clark's work has been primarily with out-door films, he has proven himself equally an artist on interiors. This production again shows it; for his interiors are beautifully handled, and the exteriors are, as has been said, superb. He has neither over-used nor under-used filters, diffusion, nor any device; his compositions are models of perfection, and his effect shots (especially several night-effects) are noteworthy. If anything could be added to this film, it would be the use of tinted-base stock for a major part of the film, if not all of it.

THUNDER BELOW

◆ This production, photographed by Charles Lang, A.S.C., is most capably and artistically handled. In the opening sequences too great use was made of the camera-crane, and, perhaps, these exteriors were not comparable with Lang's work on the interiors. The major part of the film, however, is well up to Lang's usual high standard. An interesting detail is the use of the visual moods of the photography in accentuating Charles Bickford's blindness; in the earlier sequences, before the affliction overtakes Bickford, the photography is in a relatively high key; immediately after the first hint of failing sight, the key begins to lower, until finally when the man becomes blind, the visual mood suddenly darkens, and thereby aids tremendously in giving the audience the desired emotional reaction. The only definite criticism of the production, photographically, is that the same degree of diffusion was not maintained throughout—a flaw which was accentuated by the cutting.

RESERVED FOR LADIES

◆ Both technically and otherwise, this is by long odds the most finished product that has yet come from an English studio. The photography, by Phil Tannura, is technically as perfect as though it had been made on Paramount's Hollywood stages, and, artistically, brings pleasant recollections of the fine work Mr. Tannura accomplished here before he left. Alexander Korda's direction, too, is noteworthy, and immensely superior to anything he accomplished while in this country. His frequent—and vastly effective—substitution of pantomime for dialogue should be studied and emulated by American directors, as should the restrained use of camera-movement.

There is, however, one grave flaw in the film; this is the complete omission of screen-credit for Mr. Tannura. This crying injustice should be remedied before the release of the picture, for Tannura has not only made it the finest film ever to leave Britain, but has also photographed the star, Leslie Howard, vastly better than any previous picture has revealed him.

WEEK-ENDS ONLY

◆ This is the first production that Hal Mohr, A.S.C., has photographed for Fox—and he has made a very fine job of it. The Fox studio needed Hal Mohr, for despite the fact that they have some of the industry's finest cinematographers on the rolls of their camera staff, they have not had anyone whose work is of the same style as Mr. Mohr's. In return, Fox has very generously repaid Mr. Mohr with the finest release-print quality that any of his productions have enjoyed in a long time.

Both technically and dramatically, "Week-Ends Only" is a highly enjoyable film, despite the disadvantage of a too-familiar plot. The picture opens with a most amusing sequence in which animated-cartoon figures, superimposed on a normal photographic shot tell the tale of the late stock-market crash briefly, and in a manner that holds many hints for both professional and amateur filmers. From thereon, disregarding the expert direction and capable playing, Mr. Mohr's photography is enough in itself to make the picture worth seeing. He has photographed all of the players perfectly, enhanced the beauty of Gordon Wiles' settings, and sustained his photographic mood throughout to perfection.

But undoubtedly the most welcome feature of the production is the fact that the credit-sheet credits the photography not merely to Hal Mohr, but to "Hal Mohr, A.S.C." This is a policy which all producers would do well to pursue. The fact that a majority of the producers entrust the photographic direction of their greatest films to A.S.C. men exclusively clearly proves that membership in the American Society of Cinematographers is an asset to not alone the individual cinematographer, but to the producer and the production; and it is logical, when one has such an asset, to publicize it. Therefore, let us hope that more producers will follow Fox' example, and publicize on their screens the fact that their films are photographed by members of the A.S.C.

Andre De Brie Visits Hollywood

Famed French Camera Constructor on Survey Tour

by **WILLIAM STULL, A.S.C.**

DURING the latter part of June, Hollywood's motion picture community was honored by a visit from Europe's foremost constructor of cinema equipment, M. Andre de Brie, whose firm some few months ago produced its six thousandth professional camera. While there is some possibility that M. de Brie may introduce in this country the new, silent camera which is already in general use in the studios abroad, M. de Brie stated that his present visit to America was purely in the nature of a survey.

"I have made this trip," he said, "purely for the purpose of studying at first hand the technical phases of the American motion picture industry. It is to be regretted that the pressure of my affairs forces me to curtail my stay here, for there is much to be learned; but I have tried, in so far as the time allowed, to make my survey complete. Of course, I could not visit every studio, nor meet all of the technicians; but I have tried—and, I feel, successfully—to gain, in the brief time at my disposal, a representative cross-section of the methods, needs and ideas of the American Cinema.

"It is difficult, as yet, to attempt to clearly formulate the results of my survey. The impressions and experiences have crowded closely upon each other, and there has been no time as yet to evaluate and tabulate them. But I leave with a profound respect for everyone that I have met here—and an understanding of conditions here that cannot help but be valuable to me and to my confreres in Europe.

"Although in the same business, the European and American film industries are faced with problems that differ greatly; consequently each has developed along more or less different lines. Here in America, for instance, your production is vastly greater than ours; accordingly, you have far excelled us in the matter of organization. Your technical and artistic resources are magnificently organized and centralized in the Hollywood community; ours are scattered through many communities and half a dozen or more nations.

"Here in America, you produce more than six hundred feature pictures a year. In France—despite the fact that our production is extremely large for Europe—we rarely produce more than a hundred and fifty feature films per year, and far fewer, as an average. It could not be otherwise, however, for your market is vastly greater than is ours. I doubt very much if the French and French-language market could absorb more than a hundred and fifty features per year, while it is certain that your vast market easily absorbs your five or six hundred productions, and cries for more.

"Under such circumstances, it is only natural that the European and American film industries should develop differently. To my mind, each has certain advantages over the other. From the artistic viewpoint, I believe that the European community has a marked advantage in that, since its production—limited though it is individually—collectively reaches the same total figure that yours does, is divided among several different national film centers. In my own country, the production is, as I have said, limited; so it is, too, in Germany, in Italy, and in England; but the production, being so divided among several nations, can—and does—develop along individual, nationalistic lines. In France, for instance, the major part of our product is written by Frenchmen—and made for French audiences. It reflects the French thought. A few miles away, across the Channel, lie the British Studios, whose product is essentially British, and reflects the British thought. Across the Rhine, in Berlin and Munich, Germany's production centers, we find a product reflecting the German thought, while in Italy, Scandinavia, and Russia we find productions that similarly reflect the conceptions of the various peoples of those lands.

"Naturally, this tends to develop a distinctive film-technique in each country; and despite the language-barriers introduced by sound, the films are sufficiently circulated so that the cineastes of each country may see and appraise the work of their colleagues in other lands.

"In Europe, too, we have the advantage of this without absolute loss of contact with each other, for (especially when judged by American standards) Europe is relatively small. Therefore, upon questions of material and methods, we still have the opportunity for exchange and centralization. For instance, if you will permit me to mention it, my cameras are the standard equipment in practically all of the studios—German, Italian, Scandinavian, Russian, and English as well as French.

"Our smaller individual production has been of considerable benefit in technical matters, as we have been able to develop new technical equipment for sound-cinematography. In this respect, I feel that Europe is far ahead of America. Here in your country, your cinematographers are praying for silent cameras; in Europe, we have had them for over a year. Our apparatus for the moving-camera technique (which is equally popular, by the way, with both French and American directors) is, I believe, far more complete than is yours; more compact, more refined, and more easily handled. Our perambulators are motor-driven, and noiseless.

"We have had, too, greater time to experiment in many directions. We tried out wide film, for instance, nearly ten years ago—and found it impractical, just as you did last year. We experimented with talking pictures—the Gaumont System—even longer ago. We have not, however, done a great deal with natural-color cinematography, despite experiments by Gaumont, Keller-Dorian, and others; this has been for purely economic reasons. We admire the beautiful natural-color cinematography in American pictures, but, due to our more limited production, we find the cost is prohibitive.

"On the other hand, our limited production has had its disadvantages, too. We cannot hope to equal your resources of personnel and material, nor your marvellous organization. Our technicians and artists cannot be so constantly employed as yours even through this depression. Our organizations cannot be so complete, nor our financial resources so large.

"The future lies in a more complete cooperation between motion picture communities on both sides of the Atlantic. We can learn much from each other. To my mind, the matter is best summed up in the statement that, at the present moment, Europe is in advance in technique and material, while America is supreme in organization. Only through complete cooperation—in which such organizations as the American Society of Cinematographers, and such journals as THE AMERICAN CINEMATOGRAPHER will play vital parts—can we realize the great future that is in store for the cinema, and rise above today's grave economic difficulties."

..In the Realm of Sound..

Portable Projector From Debrie

A PORTABLE 35 mm. projector of unique construction known as the "Jacky," a product of Andre Debrie, manufacturer of Paris, is being marketed in this country by the company with headquarters in New York.

The device, which is small and compact in size, being 1 foot by 8 inches in length, 1 foot by 1 inch in height and 9½ inches wide, consists of projector, one unit containing sound-head photo-electric cell, three-speed amplifier and volume control, transformer box for alternating current from 90 to 220 volts, dynamic speaker mounted in special trunk, sound screen, set of cables, hermagis projection lens, 1,000-foot magazine, set of legs for speaker and projector and 500 watt lamp.

Two trunks contain the entire equipment with a total overall weight of 120 pounds. Perfect projection is obtained, it is declared, for 100-foot throw and sound sufficient for an audience of 1,000. Features of the equipment, which is now in use on several French liners, are said to include rock steady construction, flickerless, absolutely no danger from fire, no special electrical installation necessary, metal construction throughout, film in detachable boxes, film perfectly protected and enclosed while running, film can run backward or forward by hand or motor, picture by picture projection backward or forward, instantaneous stop on any picture for any length of time for "still projection," motor film rewind and extremely easy to operate and smooth running.

Printing machines and a machine for removing scratches on negatives are also being manufactured by the company.

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R. C. A. in England

PUBLICITY Films, Limited, subsidiary of the London Press Exchange, which is the largest advertising agency in Great Britain, has been granted a sound recording license by RCA Photophone, Ltd., and immediately will begin the production of a number of sponsored advertising sound motion pictures for several leading manufacturers of English products. Publicity Films, Limited, has operated studios at Wimbleton, near London, for the production of silent pictures for the past ten years, and at the present time has contracts with more than 2,000 theatres.

In addition to producing advertising subjects, Publicity Films will record a number of industrial pictures for exhibition to sales organizations and in non-theatrical institutions, for the reproduction of which the RCA Victor 35 mm. and 16 mm. portable apparatus will be employed. It is said that both of these machines have found an unusually healthy market in the British Isles.

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Government Purchases "Rico"

THE War Department of the United States Government, operating the Federal Barge Lines, has selected a "RICO" Junior recording unit, after a careful survey of all available equipment.

This "RICO" unit will be used in the production of a picture featuring the development of the Mississippi Valley, for display at the Chicago World's Fair.

Fire Alarm Turns Talkie

ANNOUNCEMENT has just been made by the Western Electric Company of the perfecting of a new fire alarm system designed to prevent stampeding of people in fire emergencies. It was publicly demonstrated recently at Atlantic City.

By means of electrical devices, the system combines an automatic fire detector with a music reproducer which is connected to loudspeakers. In the demonstration at Atlantic City, a small flame is placed near the fire detector. A few seconds later the detector responds in three ways. It sends an alarm straight to the fire houses, directing the fireman to the side of the building nearest the fire, while in front of the building itself an arrangement of lights shows them in what particular part of it the fire is located. At the same instant, the music reproducer commences playing and is heard over loudspeakers. Thirdly, green arrows light up, pointing out the correct route for exit.

The record, designed in this case for use in a school, begins with a flare of trumpets, followed by a distant siren. Then a calm but commanding voice says: "There is a fire emergency but no immediate danger. You must leave the building. You are drilled in this and know just what to do. Leave your hats and coats, take your places in line. Steady now, don't rush. Follow the green arrows." A brass band strikes up a martial air and the sound of approaching sirens is heard through the music.

Everything in the record has a definite purpose. The band piece was chosen for its strong marching rhythm. The siren is injected to accustom the children to it in drill so that they will not be frightened when they hear the real thing for the first time. Fire chiefs recommended the command to abandon hats and coats as experience shows they are likely to be dropped, causing others in the line to stumble.

The automatic fire detector uses special wiring which is sensitive to heat. The core is a fusible alloy enclosed in a steel sheath which is slit along its entire length. At 160 degrees Fahrenheit the alloy melts and expands forcibly. It spurts through the slit and, making contact with an outer metal sheath, causes a short circuit that sets off the alarm. In actual installation, this wiring is placed throughout a building and a very small current, enough to spring the alarm, is kept flowing through it.

In the Western Electric Sound System that is used, the music reproducer is associated with an amplifier which may be connected to loudspeakers of any size placed in any number of rooms, hallways and auditoriums. The apparatus is "electrically supervised." A small current, about equal to that consumed by an ordinary 60 watt electric light bulb, keeps the amplifier tubes warm and ready to operate instantly, and also notifies the local technician should the slightest misadjustment occur. All the vital apparatus in the system is protected in a fire-proof vault.

**No Sound Engineer Should
Be Without Volume 2
Cinematographic Annual**

Ruggedness Features New Lamp

THE Nela Park Laboratories of the General Electric Company have created a new simplified construction for high-wattage incandescent lamps which differs radically from the fundamental concepts of lamp design as followed ever since Edison built his first lamp. When the movies made demands for high-powered lamps in sizes far above standard practice, the development followed, naturally, along lines of old established usage. But when we consider that some of the largest incandescent lamps made contain three pounds of heavy tungsten metal or enough to make forty-thousand 50-watt lamps, the matter of filament weight introduces an entirely new factor in lamp design and construction.

Essentially, the ordinary incandescent lamp consists of a glass stem structure which carries the leading-in wires and the filament. Around this structure and sealed to the glass stem is a bulb, and to the bulb a base is finally added making connection with the leading-in wires.

The new problem of high-wattage lamp design has now led to a simplified construction using fewer parts, and changing the entire operation of lamp fabrication. Starting with two copper prongs which serve as a base, and to which a special heat resisting glass cup is sealed, the entire internal structure is built up from the prongs, and the bulb is sealed to the glass cup as a final operation.

The new lamps, because of their simplicity of design and construction, are more rugged than the old types and consequently better qualified to meet the severe demands made upon them in studio service. This outstanding characteristic is attributable to a design eliminating from the new lamps all of those parts which in the older types were centers of weakness.

The major changes which contribute to this greater ruggedness are:

1. The omission of the conventional base which had to be secured to the bulb by cement or clamping. In the new lamps bi-post bases are used. This base consists of a glass cup with two metal posts sealed to it. Connection to the socket is made through the lower part of the post, which consists of a cylindrical prong with a shoulder for accurate seating.

2. In the old construction, the filament and leading-in wires were supported by a glass stem structure, with leading-in wires for the current fused in the glass stem. This necessitated the use of special glass and special leading-in wire material having a coefficient of expansion which matched that of the special glass. To get the heavy current into the bulb it was necessary, therefore, to have a section of copper, a section of tungsten, a section of nickel, and in some types a section of molybdenum making up the leading-in wire.

In the new lamp, the stem seal is eliminated and the supporting structure is made from one piece of channel nickel. This construction gives maximum strength to the long leads carrying the heavy filament and also provides maximum exposed surface to dissipate the heat and thus prevent overheating of the metal.

3. The special heat-resisting glass which was necessary for the stem seal material, on account of its expansion characteristics, required the bulb material to be of this same glass also, in order to make a reliable seal between the bulb and stem. Unfortunately, this particular glass when heated above a certain point, devitrifies and turns white causing premature failure of the lamp; now a special heat-resisting glass which does not devitrify is coming into use. In order to use this more desirable glass in bulbs, it is necessary to make a splice between the two kinds of glass in the stem tubing and great technical skill is necessary to do this satisfactorily.

4. In the new lamp, the metal prongs which hold the lamp in the socket or adapter have the nickel channel leads welded directly to them and thus they carry the weight of the entire metal structure, where formerly the glass assumed the burden. These prongs also carry the weight of the bulb through the strong pressed glass cup to which they are fused.

Many of the higher wattage lamps are used in projectors or equipment requiring accurate positioning of the source with relation to reflectors or lenses. In the older lamps, there were two points of weakness to contend with. The connection between filament mount and bulb was made in a plastic medium and the base was then placed on the bulb to provide as much correction as skill and the nature of the materials would permit.

In the new lamp the relative position of base and light source is determined entirely by metal working accuracy. It is inherently a prefocused lamp. The parts are built up starting with the base and ending with the bulb being sealed on as a final operation. In mounting the filament, the base and leading-in channel pieces are placed in a mechanical jig so that the shoulders of the prongs are in a fixed plane. It is then possible to locate accurately the filament with reference to this plane and the center line of the mount.

Through the elimination of the base, the heavy leading-in wires and the large stem, the new lamps are considerably lighter in weight and shorter than their predecessors. Non-divitrifying glass bulbs, which stand up better under high temperatures, make possible the use of bulbs of minimum size. This makes possible the storage of a greater number in a given space, and is a decided advantage in the studios where space is limited.

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A "Two-Eyed" Film Camera

MOTION pictures are invading the sports field from a new angle through the development of the Kirby Two-Eyed Camera, a motion picture and timing device electrically operated that photographs a record of both the finish and time of a race. It was developed at the Bell Telephone Laboratories for Electrical Research Products under the sponsorship of Gustavus T. Kirby, noted amateur sportsman who is chairman of the Advisory Committee of the I. C. A. A. A. A. and of the Olympic Games Committee.

Although not yet at the marketing stage, the device was satisfactorily demonstrated at the recent Columbia-Syracuse and Princeton-Cornell dual meets. It will be used at the I. C. A. A. A. A. meet in Berkeley this month and later at the Olympic Games.

The timing device consists of three dials registering in minutes, seconds and hundredths seconds that are attached by wires to the starter's pistol and begin to revolve the moment the hammer of the pistol strikes. A 16 mm. motion picture camera with a double lens that registers 128 frames a second photographs the runners finishing and their time simultaneously, providing an indisputable record of both.

Kirby said he realized the need of such an indisputable timing device about five years ago when a committee looked at motion pictures of the finish of an intercollegiate race and found the runner who finished second hadn't even been placed by the judges. Subsequently he contacted with ERPI officials who had a similar idea but greater laboratory facilities with a subsequent pooling of ideas.

The specific advantages of such a device Kirby pointed out are: first, an indisputable record to go by; second, the elimination of the average of human error in the handling of stop watches, and third, an ability to record time in hundredths of a second as compared to the stop watches' tenth of a second.

Laboratory Department

Conducted by **EMERY HUSE, A. S. C.**

Principles of Sensitometry and Their Practical Application

Part 15

THE preceding article discussed in some detail the various chemicals entering into photographic developing solutions and the part they played in these solutions. It is important now to consider somewhat the action of development, going into some detail regarding the structure of the developed photographic image.

The photographic emulsion consists fundamentally of silver nitrate, potassium bromide, and other chemicals, suspended in gelatin and coated upon some support such as film base. It is possible by chemical and physical control of the silver salt crystals, together with the addition of other materials, to make emulsions of different characteristics. They can be made either slow or fast, of low contrast or high contrast, varying in sensitivity to light of various wave lengths. The processes of making light sensitive photographic emulsions are extremely delicate. Emulsions of different characteristics are made for different purposes and it is extremely important that in the use of these emulsions considerable thought and care is given to the development of these emulsions. The strength and temperature of the developing solutions play a very important part and there are other items which must be seriously considered in compounding a developer formula for any specific type of work.

Development of emulsions naturally follows the exposure because it is only by development that it is possible to discern what has taken place during the exposure. The silver in the photographic emulsions prior to development is basically in the form of silver bromide. The process of development is to liberate by chemical action the bromide, thus reducing that salt to metallic silver. The rate at which the grains develop depends upon the number of exposed but undeveloped grains left and after the grains are developed and the number of undeveloped grains remaining becomes less, fewer and fewer grains develop in each minute until finally it is not worth while to prolong the development in order to get more density. If the development is prolonged beyond the point at which all the exposed grains are developed, then there is danger of developing some of the unexposed grains, thus causing what is known in photographic terminology as "fog." This fog produces a veil over the whole negative, exposed and unexposed portions alike.

The growth of the image during developing is referred to as growth of density, that is to say, the density is a measure of the number of grains of silver which are produced at any given point because these grains, after the film has been cleared by the fixing bath, obstruct the passage of light through the film.

It can be seen that there are stages during the development process when all of the exposed silver grains are not developed. It is possible, therefore, to stop development at any point by removing the photographic material from the developing solution and fixing it. This fixing process removes all of the unexposed and undeveloped grains, leaving only the metallic silver grains which were developed as a result of exposure. The degree of contrast in a negative, therefore, can be controlled by the extent of development. Contrast is the difference of density between the darkest portion and the lightest portion of the negative.

Just as there are emulsions of varying degrees of speed and contrast so are there developer formulas differing in the same degrees. The functions of developing solutions of different kinds are to help promote the same ideas for which the various types of emulsions were manufactured. In the consideration of picture negative an emulsion of high speed and low contrast is desired, for the reason that accurate rendering of minute details is essentially important from the negative standpoint. The developer for this type of film should be one that preserves the delicate gradations which have been picked up by the negative and to accomplish this a slow working, safe developer is necessary.

In considering the picture positive and the use to which it is put it is easy to realize that a certain higher degree of contrast is desirable to produce upon the screen a picture having roundness, depth, and brilliance. The emulsion manufactured for this purpose is basically a high contrast low speed emulsion. The developer in which a film of this type is handled is a rather fast, contrasty solution.

In considering sound negative, which in the majority of cases is made on a positive type of emulsion, an extremely soft developer is used to produce low contrast for one type of sound recording, while for another type a more contrasty and more vigorous solution is necessary.

The foregoing statements have been given to show very briefly how the developing solutions must assist the emulsions in producing the desired results. It is not the purpose of these articles to delve into the field of practical photography and explain why emulsions of certain characteristics are devised for certain purposes. In this particular section of this series of articles we are concerned most with the developing aspects. It would be well at this point to give in tabular form developer formulas which could be adopted with or without modification for the development of negative or positive picture or sound.

It is logical to consider first the picture negative as it is around this that the entire motion picture photographic art is built. The outstanding formula for the development of picture negative is that formula commonly referred to as the "borax developer." This formula was originally presented to the trade in the form of a solution to be used by the rack and tank method of development, because at the time of its origination there was practically no machine development used. The standard published borax formula for rack and tank use is given here.

Borax Developer (Tank)

(Fine grain picture negative developer)

Elon	2 grams
Sodium Sulphite	100 grams
Hydroquinone	5 grams
Borax	2 grams
Water to	1 liter

It will be observed that this formula is extremely simple and contains but four constituents. The proportions of elon and hydroquinone govern to a large extent the contrast building power of that solution. The borax is the accelerator. The sulphite, besides being the preservative, is the major element in the production of the fine grained effect. The sulphite acts as a partial solvent for the developing silver halides and this solvent action prevents grain clumping. As a result this developer compared with any other type of negative solution is far superior because of the fine grained results produced by it. This developer is recommended for use at 65°F. with a time of development varying from 8 to 15 minutes, depending upon the degree of contrast desired.

THEY STARTED WITH

"INKIES"

AND ENDED WITH

DAYLIGHT

●

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Processing Sound Track

Both Negative and Positive

by **J. ELLIOTT JENKINS**
Jenkins & Adair, Inc., Chicago

THE following information on the laboratory processing of negative and positive sound track has been obtained by us from the most reliable sources on this rather intricate subject. Though the information varies considerably as to general procedure, we are presenting all that we can obtain for what it is worth. It must be noted here that this information applies only to the recording of sound track on POSITIVE STOCK as used in a DOUBLE RECORDING SYSTEM, and that recording done specifically with a GLOW TUBE.

1. The following procedure has been worked out as the result of a paper by Mr. Sandvik and Mr. Hall on variable density processing, delivered before the Society of Motion Picture Engineers, Spring meeting, 1932. It is an attempt to suppress harmonics as much as possible, and at the same time give a sound track of good contrast and high audio response.

Using sensitometric strips or their equivalent, determine the time of immersion in some good positive developer to give a Gamma of 0.6.

Make several short sections of unmodulated track with different glow tube currents, ranging say from 5 to 10 M.A. for the ordinary tube.

Develop these sections at the time found above to give a Gamma of 0.6, and determine which glow tube current produces a track of Density 0.4.

Record with glow tube at this current and develop to Gamma 0.6.

In making the print, adjust intensity of the sound track printer lamp to give a density of 0.7 to 0.6 or Transmission of 20% to 25% in the unmodulated portions, when the picture positive is properly developed.

2. This procedure is used to some extent in Hollywood and recommended by a manufacturer of recording equipment.

Determine Time Gamma for developer which will give 0.55.

Find the required glow tube current to give a Density in the unmodulated track of 0.3, or 50% Transmission.

Process the sound track to the above Gamma, using the glow tube current thus determined.

Adjust the sound track printer lamp so that the unmodulated portions will have a Density of 0.7 or Transmission of 20% when the picture positive is properly developed.

3. A large West Coast producer of talking pictures used approximately the following procedure:—

Determine the time of the developer to give a Gamma of 2.30.

Find the required glow tube current to give an unmodulated track Density of about .75 at the above Gamma.

Adjust the sound track printer lamp to give a Density of 0.7 to 0.5 or Transmission of 20% to 30% when picture positive is properly developed.

4. We can give the following preliminary information on the new Eastman recording stock, which has a high-speed positive emulsion on a gray base to reduce halation.

Find the Time Gamma for developer to give 1.65.

Find the required glow tube current to give a Density of 0.7 at the above Gamma.

Adjust sound track printer light to give a track of Density .46 (35% Transmission) when picture positive is properly developed.

We can include at this point a few definitions and descriptions which may be in order:

GAMMA:—Gamma is simply a numerical measure for contrast. It is the name given the number which is the natural tangent of the angle made by the straight-line section of the H and D curve of any developed emulsion with the horizontal line, or abscissa. After reading the rest of this paragraph, the above should have some meaning. The H and D curve for any emulsion, developed for a known period, is obtained by exposing a section of the film in question so that each successive exposure increases according to the square law. Such an exposed strip may be very rapidly made on a good camera by making a sequence of photographs at one shutter speed of a brightly illuminated sheet of white paper, and opening the iris diaphragm one stop for each succeeding exposure. Develop for a predetermined number of minutes and measure the density of each exposure. Plot these values along the abscissa of plain cross-section paper at points equal to .03, .31, .58, .92, 1.20, etc., as the diaphragm opening is **increased**, against the densities of each succeeding exposed section. The resultant curve should have in its middle portion a straight-line section. The natural tangent of this section to the horizontal line is Gamma, for this particular emulsion, processed in a certain developer for a certain number of minutes.

The stronger the developer, the steeper this curve will be for a given emulsion and a given time.

The longer the time of development, up to a certain point, the steeper this curve will be for a given emulsion and a given developer.

Emulsions of different speed, in a given developer for a given time, will give similar Gammas.

As this curve approaches the vertical, Gamma of course increases as the tangent of angle it makes with the horizontal, which simply signifies that the picture or sound track is more and more contrasty.

When Gamma equals unity, the slope of the H and D curve is 45°, the tangent of which is 1. This signifies that the densities of the negative are exactly in inverse proportion to the lights and darks of the photographed subject. If the positive is developed also to a Gamma of unity, this condition will be maintained. Furthermore, if Gamma for the negative times Gamma for the positive equals unity, the above is also true.

The so-called "Classical Method" was to develop negative and positive sound track so that the product of the two Gammas equal 1. This method is still used to some extent, but has several undesirable effects when used in the processing of glow tube recording.

SENSITOMETRIC STRIPS:—These are sections about 10 inches long which have been exposed with a logarithmic increase, just as may be done in the above procedure with a good camera, but with much greater accuracy. The Eastman

(Continued on page 31)

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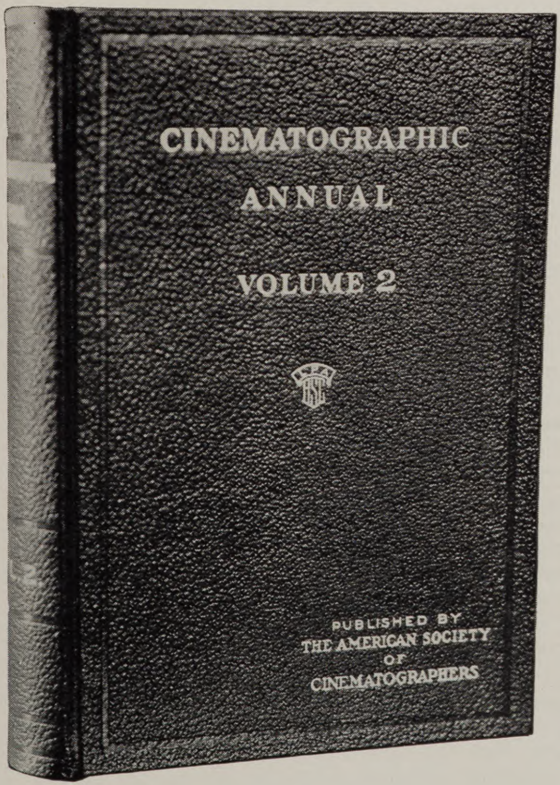

64 Page Pictorial Section

Just A Partial List of Contents

- The Cinematographer's Place in the Motion Picture Industry, Lighting, Cinematic Teleology, Making a Fadeout by After Treatment, Chromatic Correction in Cinematographic Lenses, Transmission Losses in Motion Picture Lenses and Their Significance, Making Matte Shots, Projection Arcs, Aerial Cinematography, The Motion Picture Industry and the School, Improvements in Motion Picture Film, The Relative Masses of Photo-Silver, Cinemicrography with the 16 mm. Camera, What They Use in Hollywood, Straight Line and Toe Records With The Light Valve, Process Photography, On the Theory of Tone Reproduction, with a Graphic Method For the Solution of Problems, A Method For Testing a Photographic Lens, Characteristics of Du Pont Panchromatic Negative Film, The Larger Screen, Motion Pictures in Natural Color, Graininess of Photographic Deposits—A Review, Acoustic Power Levels In Sound Picture Reproduction, A Parallel of Technical Values Between 35 and 16 Millimeter Films. The Use of Carbon Arc Lighting, Optical Printing, Costumes and Sets As Mediums of Expression, Eastman Supersensitive Panchromatic Type Two Motion Picture Film, Making Tests With a Small Camera.

Published in Hollywood by the

American Society of Cinematographers

(Camera Masters of the World)

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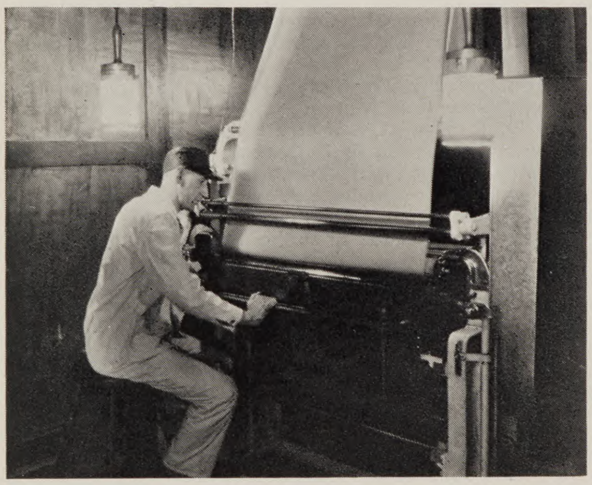
Motion Picture Film

(Continued from page 17)

There, on our right, is a building in which silver, by modern alchemy, is turning into materials far more precious to this civilized era—including motion picture film to entertain every week a large portion of the population of the United States.

It is a temptation to spend too much time seeing what happens to the silver. More than four tons of it are used every week. That is fascinating because it sounds fabulous. More interesting to technicians are the methods of converting silver purer than that which the mint buys into perfectly pure silver nitrate, ready for emulsion making; but we must leave closer inspection for a later instalment, even though the production and testing methods involved are quite typical of the whole film-making operation.

The film support or base—here again only a quick glance at the process—is composed of cotton which has been treated with a mixture of nitric and sulphuric acids to render it soluble in a mixture of solvents, the chief of which is methanol (wood alcohol). The "dope" obtained by dissolving nitrated cotton, having the consistency of honey, is spread on the polished rim surfaces of great wheels that run continuously, night and day, month after month. Heat around the giant wheels drives the solvents from the "dope" and permits the nitrated cotton to assume the form of a thin transparent layer on the surface of the wheels. After various convolutions within a machine, a wide strip of finished film base emerges and is wound up in rolls like newsprint paper.



Coating film base with emulsion

Let's examine for a moment the steps that must be taken, collateral with the manufacturing process so briefly outlined, to insure the quality of the resulting film support. Let it be remembered that a microscopic speck of dust embedded in the material might be the nucleus of a spot causing a freckle on the nose of an immaculate cinema actress, a sharp crackle in the midst of a sound-film love scene, an extra star in some astronomer's Pleiades—or might spoil a snapshot of a child in some particularly entrancing pose.

Unusual climatic conditions might bring deterioration of valuable films if such exigencies were not provided for in manufacture.

Purity and precision are imperative in every operation and handling during film manufacture.

Samples of all cotton coming into the plant are tested before use. Three potential variables are thus governed. . . . Cotton, before being dumped into the nitrating machines, is accurately weighed. Variables of the nitrating acid, in addition to its temperature and amount, need to be controlled—and tests accomplish this. . . . Nitrated cotton, immersed in water, flows only through tile pipe-lines, to avoid contact with metal. . . . In the purification and storage building to which the flow is conveyed under a street and under a railroad track, the tanks are made of material inert to the ravaging action of acids so that no impurities may be introduced at that point.

The substance inelegantly called "dope", after the nitrated cotton has been thoroughly dissolved by its solvents, actually is the direct culmination in chemical purity of the careful work of hundreds of chemists and skilled workmen; and the result of study and improvement by two generations of engineers and research scientists. The physical condition of the material, as distinguished from the chemical, becomes evident when one sees the resulting sheets of film base winding through the great machines, so flawless and transparent as to be practically invisible.

Battery of machines converting film "dope" into sheets of film base

Gelatine is used in large aggregate quantities to suspend the emulsions' silver salts evenly on the film base—but gelatine for photography must be chemically purer than that used for food. To make photographic gelatine, patient processes of chemical treatment in hundreds of covered concrete tanks prepare hide remnants for cooking. The gelatine, after washings, boilings, filtration, solidification, blending and action to remove any accidental metal content, is ready to join the silver nitrate in the emulsion department.

The making of light-sensitive emulsions—the portion of film which actually records the picture—is a highly diversified and extremely delicate process. The photographic industry, in fifty years of experience, has turned an art depending on chance and mood into an exact science. The genius of pioneering emulsion makers, combined with the manufacturing talent of picked chemical technologists and combined with the large production which the photographic industry has reached—for size and therefore continuity of operation is an important factor in insuring uniformity of photographic materials—has established the quality of this delicate substance known as photographic film on a level where the users of film need hardly give a thought to its quality.

The news man "shoots" racing aeroplanes from a precarious perch; the studio man makes softly moulded close-ups with exquisite care; the laboratory man produces several hundred prints of a feature. All these activities require types of film that will respond faithfully to the technicians' skill, every time, year after year.

Chemical and physical control of silver salt crystals, together with the addition of extraneous materials, makes emulsions

(Continued on page 49)

Army Officer to Hollywood

THE United States government, through the War Department, is keeping abreast of all technical developments in motion picture production procedure. Through a cooperative program worked out by the Academy of Motion Picture Arts and Sciences, which will be continued this year, selected Army officers are sent to Hollywood where they spend time in the various departments of the different studios learning current processes and technique.

Captain M. E. Gillette, now stationed in the War Department offices at Washington, D. C., has been ordered to this duty and will arrive in Hollywood later this summer for a comprehensive course in the making of sound motion pictures.

The officers receiving this instruction will form the nucleus of a unit in the Signal Corps charged with the production of educational sound motion pictures to be used for the instruction of both the Regular Army and the Officers Reserve Corps.

Captain Fred W. Hoorn, who received this instruction through the Academy last year is now located in Washington, D. C., where he is engaged in the preliminary organization of this new Signal Corps unit.

◆

Imagination in Set Design

(Continued from page 9)

pictures; I sketch out the arrangement and composition of each scene. In doing this, I almost invariably find that this pictorial visualization of the script has revealed action that is missing, that is superfluous, that can be told in pictures rather than dialog, or that can advantageously be transposed to another set. Frequently I find angles on some certain action entirely missing, or, perhaps, wrongly or misleadingly used. If it is possible at this stage, I then consult the Cinematographer who is to photograph the picture. Between us we may find other changes advisable—eliminate this, add that, or alter the other. Thereafter, I consult the Director and the Scenarist both together and separately. When my pictured script is finally completed to the satisfaction of all concerned, I begin the planning of the sets themselves. I make colored drawings of each set to visualize the design. From these drawings, we prepare the actual plans, which must naturally embrace the physical, architectural and engineering details necessary for the construction and use of the set. Finally, the set is built, painted and dressed, ready for use. The rest rests with the Cinematographer; and these men rarely fail.

Another condition exists which hampers the Art Director and the Cinematographer alike. This is the inadequate opportunity afforded for coordination of sets and costumes. Both the Set Designer and the Costumer must work in complete coordination; but the latter is rarely allowed the opportunity for this, since the costumes are all too frequently ordered at the last minute, and under circumstances that allow him little, if any time to find out what sort of sets they are to be used on.

Fortunately, however, I am certain that the day of more perfect coordination of all of these vital factors is at hand. And when it arrives, we can be sure of pictures that are motion pictures not alone by chance, but by deliberate intent. For we cannot fail to make real moving pictures once the Writer, the Director, the Art Director, the Costumer and the Cinematographer are allowed to coordinate their ideas and efforts.

◆

RCA for Rockefeller City

CONTRACTS providing for the most complete system of sound reproduction and amplification ever designed for theatres have been awarded to the RCA Victor Company, according to an announcement from Rockefeller Center, Inc., holding company for John D. Rockefeller, Jr. These contracts call for the installation of all the necessary sound equipment in the International Music Hall and the RCA Photophone sound reproduction in the RKO Photoplay Theatre, on the Radio City side of Rockefeller Center.

The installation, when completed, will embrace a public address system, annunciators, projection booth sound apparatus, rear stage reproduction, seat phones for the hard-of-hearing, and custom built film phonographs for the reproduction of sound effects.

In the projection booth the equipment will consist of an 80-watt double channel unit with four, all AC operated, sound motion picture projectors.

The rear stage sound reproducing equipment, consisting of two sound channels, will be used for the reproduction of sound effect in connection with stage productions of the International Music Hall.

Acousticon Seatphones will be installed for the benefit of the hard-of-hearing at convenient locations in the orchestra sections of the theatre. The complete annunciator system will give the stage manager and other officials contact with all dressing rooms, the projection booth and any other parts of the theatre.

◆

Processing Sound Track

(Continued from page 28)

Kodak Company, Hollywood, California, has signified its willingness to supply these strips made on the type 11-B Eastman sensitometer. In using these strips to determine Time Gamma of the developer, plot each successive square in steps of 0.15 as described above. These strips are generally supplied on Eastman positive stock, so much of which is used in recording, and are most convenient in determining Time Gamma for developers.

THE DENSITOMETER:—A simple and very accurate densitometer, and one much used in the motion picture industry, has been designed by Capstaff and is supplied by the Eastman Kodak Co., Rochester, N. Y. This instrument is very portable and convenient and operates from a 6 volt storage battery or 110 Volt AC circuit. It consists of a simple optical arrangement, whereby an unknown density is composed with the varying density of a glass disc. The disc is rotated to make the reading, and only a few seconds are required. It is calibrated in Density, and a chart is supplied giving conversion into percent Transmission when required. The area of the film to be examined is only about 1 square millimeter.

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Uniform Aperture Information

MOTION picture theatre managers and projectionists in foreign countries throughout the world will soon receive copies of the Academy Uniform Aperture Information Leaflet written in their own language as a result of plans announced by Lester Cowan, Executive Secretary of the Academy of Motion Picture Arts and Sciences. This is the final step in the educational campaign to inform theatre managers and projectionists of the changes necessary to correctly project the improved uniform picture frame recently recommended by the Academy and adopted by all the American studios.

Arrangements have been completed with the cooperation of the Motion Picture Producers and Distributors of America. Inc., for engineers stationed in Paris to translate the technical terms of the instructions, after which they will be given world-wide distribution.

Reports received by the Academy from the Film Board of Trade Secretaries in the key cities indicate that the information sent out with the first releases coming from the Hollywood studios photographed on the new frame size has reached all theatre managers and projectionists in the United States. All pictures now being released should be projected through an aperture of the correct .600" by .825" dimensions in order to insure that all essential action reaches the screen.

Projection supervisors and circuit executives have strongly endorsed the new Uniform Aperture, noting savings in time and costs which will be effected in the theatres, as well as an improved projection of the picture upon the screen.

◆

Duplication of Motion Picture Negatives

(Continued from page 14)

density greater than 0.4 for a gamma of 1.0 in order to insure good tone reproduction. With emulsion 1355 lower minimum densities were permissible. Comparison of the results from tests Nos. 1 and 2 showed that an increase in density in the duplicate negative caused a very slight increase in graininess. Likewise, from the results of tests Nos. 3 and 4, it was seen that an increase in density of the master positive caused the same effect. Results from tests Nos. 9 and 10 also confirmed this observation. This fact is not new and is in agreement with the previous findings of one of the authors.[*]

B. Results Obtained Using the 1355-1505 Process

In tests Nos. 5 to 14 inclusive, Eastman Duplicating Positive film, emulsion series No. 1355, was used for the master positives and the yellow dyed duplicating negative film for the duplicate negatives. With the exception of test No. 6, Eastman Duplicating Negative Fast, emulsion series 1505, was used for the duplicate negatives. Tests Nos. 5 and 6 were for comparing the merits of emulsions 1503 and 1505 when used for the duplicate negative and developed to a low gamma. There appeared to be practically no difference in the graininess or quality when comparisons were made between the exhibition prints.

Test No. 8 shows the results obtained when the master positive was developed to a very high gamma in developer D-16. The duplicate negative, which had been printed to the lowest minimum density in the region of correct exposure, was developed to a correspondingly low gamma. The result was a very low graininess ratio (6.3), when compared with the results of the other tests. However, the quality was not as good as with the lower gamma master positive due to the necessity of printing the high master positive densities in the region of overexposure. By lowering the gamma slightly (1.85) the quality was improved. This was illustrated by the results obtained from test No. 7 in which there appeared to be no increase in graininess over that in test No. 8.

Tests Nos. 9 and 10 were for the purpose of determining whether or not a special contrast iodide developer would permit the use of lower minimum densities for the master positive. It apparently had no advantage in that respect and was objectionable because the graininess was slightly worse than in the case where D-16 was used (tests Nos. 10 and 11).

Tests Nos. 13 and 14 were made using a special high contrast developer. Results showed that the quality was good, but the graininess was worse than in those tests where D-16 was used for developing the master positive.

C. Comparison Between 1355-1505 and 1302-1201 Processes.

Tests Nos. 15 and 16 were for the purpose of comparing the results obtained from the 1355-1505 and 1302-1201 processes; also for determining the effect of using emulsion 1505 for the duplicate negative in the 1302-1201 process. The results showed that for equal gammas the graininess was appreciably better when the 1355-1505 process was employed. No advantage was gained by using emulsion 1505 instead of emulsion 1201 in the 1302-1201 process.

Test No. 17 showed that graininess results comparable with those obtained in test No. 7 were obtained when 1302 was developed to a very high gamma (2.62). The quality was poor and development defects were noticeable, caused by the very low degree of development necessary for the negative.

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2. **Ives, C. E. and Huse, E.: Notes on Making Duplicate Negatives, Trans. Soc. Mot. Pict. Eng., No. 34, 382, 1928.**

3. **Crabtree, J. I.: The Graininess of Motion Picture Film, Trans. Soc. Mot. Pict. Eng., No. 24, 77, 1927.**

4. **Capstaff, J. G. and Purdy, R. A.: A Compact Motion Picture Densitometer, Trans. Soc. Mot. Pict. Eng., No. 31, 607, 1927.**

5. **Crabtree, J. I. and Ives, C. E.: A Replenishing Solution for a Motion Picture Positive Film Developer, J. Soc. Mot. Pict. Eng., No. 15, 627, 1930.**

[*] For explanation of emulsion characteristic curves with regard to exposure, latitude, tone rendering, gamma, etc., see:

"Fundamentals of Photography" by C. E. K. Mees—Chapter VIII. Published by Eastman Kodak Co., Rochester, N. Y.

"Photography—Principles and Practice" by C. B. Neblette—Chapter IX. D. Van Nostrand Co., Inc., New York, N. Y.

Editor's Note: This is the first installment of this interesting paper which was read before the S.M.P.E. The second part will appear in the August issue

◆

Welcome, Mr. Sheehan

AFTER months of rumor and disquieting gossip, "Winnie" Sheehan is again back in charge at the Fox Studios; and with his return a perceptible change in the studio atmosphere is noticed. Nothing breaks down the morale and the efficiency of a force of workers quite so much as uncertainty; and for many months there has been plenty of that at the Fox lot. New heads came and went like flies, and studio workers at times hardly knew who to call the boss. Now that Mr. Kent has assumed the presidential post and Sheehan is back at the studio helm we can again look for Fox Films to turn out a product that they may well be proud of, and one which should make for black ink in the ledger instead of red.—H.H.

◆

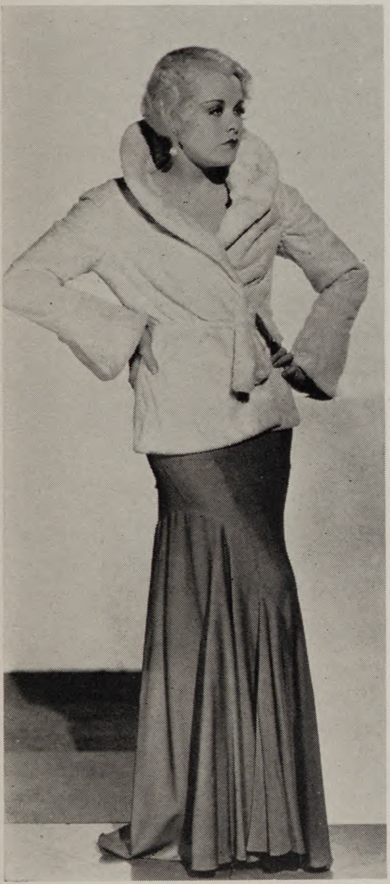
Academy Award Committee

APPOINTMENTS to the 1932 Committee of the Academy of Motion Picture Arts and Sciences on Annual Awards for achievements in motion pictures are announced as follows by President M. C. Levee of the Academy:

David O. Selznick is chairman of the committee, which includes three representatives for each of the five Academy branches, as follows:

Actors—Edward G. Robinson, Fredric March and Jean Hersholt; Directors—Ernst Lubitsch, Lewis Milestone and King Vidor; Producers—David O. Selznick, Louis B. Mayer and Walter Wanger; Technicians—Cedric Gibbons, Carl Dreher and Ralph Hammeras; Writers—Oliver H. P. Garrett, Frances Marion and Al Cohn.

STYLES from HOLLYWOOD



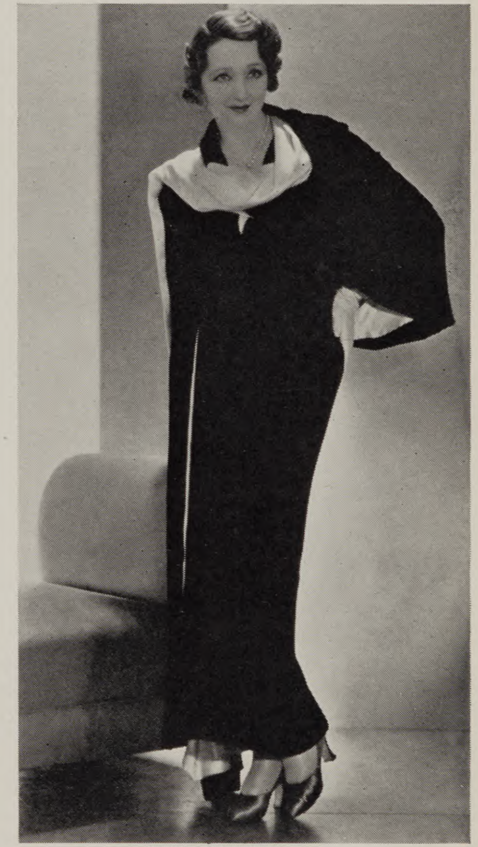
Evening Costumes

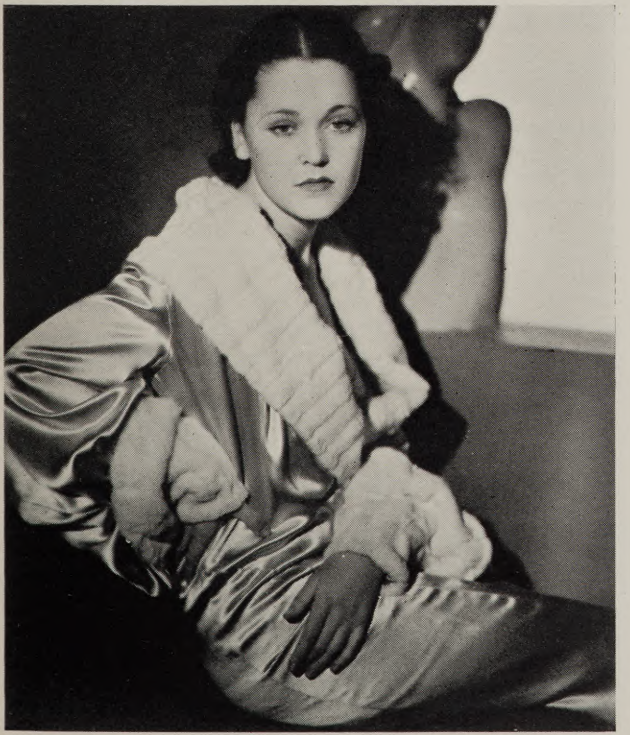
At upper left is Joan Marsh in a dress of bright red crepe with high waistline effect and skirt of almost train length. The short white fur jacket has great appeal among the younger Hollywood picture stars and is frequently seen at evening affairs among the picture people.

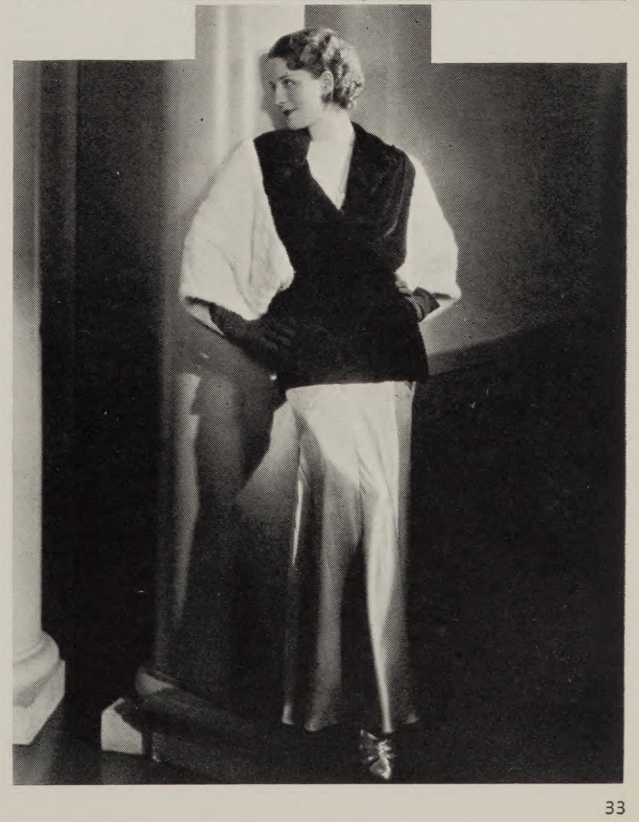
◆ At upper right is the popular Hedda Hopper wearing one of the longer evening wraps. It is of black velvet, showing white satin lining. This wrap has wide-flaring cape sleeves and graceful fur scarf which reaches the ankle-length of the wrap.

◆ At lower right is the charming Norma Shearer wearing one of the short evening coats. It is of ermine and black velvet, but, unlike the one on Miss Marsh, this has flaring sleeves.

◆ Maureen O'Sullivan is shown at lower left wearing a full-length evening wrap of satin, trimmed with fur at collar and cuffs.







Amateur Movie Making

by WILLIAM STULL, A.S.C.

THE Tenth Olympic Games, which will be held in Los Angeles the last of this month, may well be cited as a demonstration of the civilized world's devotion to sport; but to those of us who are in any way interested in cinematography, they will have an even greater significance as a demonstration of the world's acceptance of amateur cinematography. It is difficult to predict how many of the hundreds of thousands of visitors from all parts of the world will be equipped with amateur cinemachinery—some estimates have been as high as one out of every three—but it is certain that a very large portion of the Olympic visitors (to say nothing of the contestants) will be amateur cine enthusiasts.

There is much food for thought in this, not alone for the vast legion of amateur cinematographers, or those whose business it is to supply them, but also for everyone in any way connected with the motion picture and photographic industries. Amateur Cinematography has come into being during the last ten years, and has grown to its present amazing proportions actually since the last Olympiad. Ten years ago, in all the world there were but a few hundred scattered amateur cinematographers; today there are over a million in the United States alone. Ten arenas, each larger than Los Angeles' great Olympic Stadium (which seats 110,000) would not be sufficient to accommodate them.

Ten years ago, the few scattered amateurs in cinematography used equipment of at least six or eight different film-sizes. Today the millions of amateurs are united in the use of 16 mm. standard film and equipment. Ten years ago, amateur cinematography was so expensive as to be well-nigh prohibitive; today it is within the reach of anyone of moderate means. Ten years ago, cinematographic equipment was bulky and complicated; today it has shrunk to coat-pocket dimensions and "Brownie" simplicity. Ten years ago, sluggish, color-blind Orthochromatic film was the best available; today, Super-sensitive Panchromatic and Kodacolor emulsions are the the rule. Who dares say what the future holds?

Suffice it, then, that the Tenth Olympiad will certainly be the Cinematic Olympiad, as well. How, then, shall we expect to secure personal, pictorial records for our personal film-libraries? How can we expect to get anything worth while, when there will be hundreds of thousands of people viewing each event, and thousands of amateur camerists seeking each vantage-point?

The only answer is: come prepared to **make** whatever position you may draw a vantage-point. Come prepared with both the equipment and the knowledge necessary to this, and you will not return disappointed.

The first preparation must be, of course, resignation to the fact that unless you are a gate-crasher of an order vastly superior to Mr. "One-eyed" Connelly, you cannot obtain a position directly on the field, as you could at lesser meets. Therefore, you must be willing and able to "cover your story" (as the newsreel men would say) from the stands. This of course means telephoto lenses. Not—if you want the best results—just **a** telephoto lens, but **several,** for you cannot forecast your exact location, or, even if you could, the exact groupings of the different athletes in the different events. Moreover, for some events you will want one angle, and for others, a different one. Therefore, as large a battery of telephoto objectives as your purse can afford. For practical purposes, a two inch, and a four inch should be ideal, while in some instances a six-inch lens should prove handy as well.

The one inch lens is, of course, indispensable, for you will need it for your general use on the trip. In addition, you will need it if you want to accurately picture the stadium and the crowds. You will want the one-inch lens, too, for most of the swimming events, which are, naturally, held in a smaller stadium.

The two-inch lens will, I believe, prove the most generally useful in the stadium, for it will bring you close up on many of the race-events—as close, that is, as you will care to come unless you want to fill the screen with one certain contestant. In addition, it will give you full-screen figures of the diving events.

The four-inch lens will be your photographic field-glass; it will give you close shots of the finishes of races, and of the individual contestants. In addition, it will prove indispensable if you want to get full-screen figures of such events as the shot-put, the discus, hammer and javelin throws, the pole-vault and the high and broad jumps. It should likewise be of value in the yachting and rowing events.

The six-inch lens will be of greatest value in securing exceptionally close shots of phases of the field events just mentioned, and in the aquatic events.

Now, telephoto lenses—as most of us have learned from sad experience—mean tripods; and tripods and crowded stands do not work well together. This problem is perplexing, but by no means unsurmountable. The simplest makeshift to use in such a difficulty is the handy little chain-support marketed by the "Leica" people. This consists of a small block, which is screwed into the camera's tripod-socket, and a yard or so of light chain attached to the block. The trailing end of the chain is caught under the toe, and the camera raised so that the chain is taut; with a little practice one can learn to keep the camera surprisingly steady with the aid of this simple gadget. But, if you want a more substantial support for the camera than this, it is easy to obtain an English walking-stick tripod. Normally, these are very attractive canes; but when the occasion arises, presto! off come handle and ferrule, out slide three extensible legs—and you have an excellent light tripod. These tripods are, however, designed for light still cameras, so they have no pan-and-tilt movements; furthermore, they take up quite as much space, when open, as any other small tripod. But—why open the legs? used with the legs folded, as a unipod—a mere support for the camera—they offer everything needed, for they may be panned and tilted themselves, support the camera firmly, and require a minimum of space. There are, too, I believe, unipods made exclusively for cine work in England.

So much for tripods. Now, how about film-speeds and angles?

These two are, in this case, somewhat dependent upon each other, and upon the lens used. It is extremely advantageous to have a multi-speed camera for such work as this—and not alone for the possibility of making slow-motion pictures, either. When you are working from a foundation which is at best not perfectly firm (as is the case with either the chain-tripod or unipod), the use of a slightly increased camera-speed will do a great deal to make the pictures appear steady on the screen. The normal taking-speed is, of course, 16 frames per second; but if we increase this to 24, or even to 36, minor vibrations and unsteadinesses are to a greater or less extent ironed out, while the screen speed of the action

(Continued on page 49)

THIS EASTMAN
MOVIE OUTFIT
OFFERS DEPENDABILITY AND RARE CONVENIENCE... AT LOW COST

CINÉ-KODAK M, $75... KODASCOPE C, $50

There is a vast difference in lenses with the same *f.* rating. The lens on the Ciné-Kodak M is a *true* anastigmat *f.*3.5, giving sharp definition from edge to edge of the image. No focusing is required. And it's no mere fair-weather lens, for it gives you the same superb picture quality throughout the range of diaphragm stops.

Because of its convenient shape and perfect balance, it's easy to hold this camera steady while you're shooting. And you can get in a picture yourself by simply setting the camera down on a flat surface, locking the exposure lever, and walking into the picture area.

Further features are easy loading and operation, and an eye-level finder which gives you full vision without strain or squinting.

A worthy companion to the Ciné-Kodak M is the Kodascope C. This projector is easily portable... simple to thread and operate. The "C" projects a picture that's notably clear and brilliant. It stops for "stills"... rewinds at high speed.

Ciné-Kodak, Model M, and Kodascope C can be seen and examined at your nearby Ciné-Kodak dealer's. See for yourself why this Eastman outfit is the outstanding "buy" in movie equipment today.

EASTMAN KODAK COMPANY, ROCHESTER, N. Y.

Sound Cartoons and 16 mm.

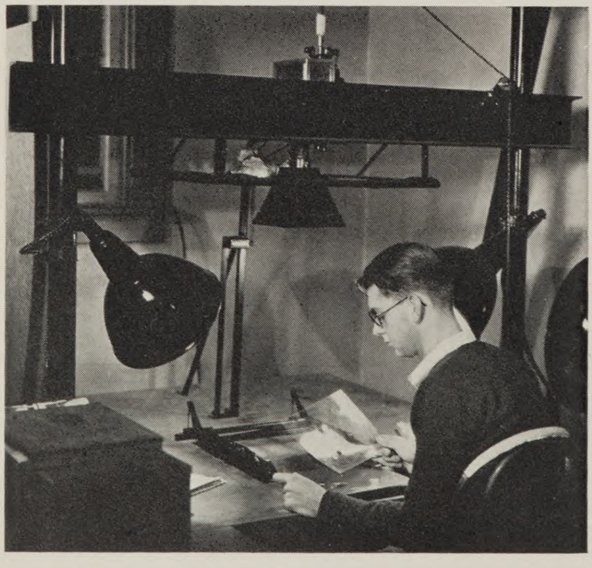
by WALTER LANTZ

Creator of Universal's "Oswald" and "Pooch" cartoons

THE advent of sound has changed the business of animated cartooning tremendously. In the old days, one needed merely to be something of a cartoonist, something of a "gag-man," a good animator—and just a little crazy, in order to make animated cartoons. Nowadays, in addition to all of these, one must be something of a musician, as well, and demented enough to produce slightly crazy music as well as slightly crazy drawings. In producing sound-cartoons commercially, we have, of course, the advantage of being able—or to put it more truthfully, compelled—to do things by factory production methods; we let one man take care of the story, another the music, others the backgrounds, animation, etc. Of course, the average amateur movie maker cannot do things on this scale, but there is really nothing to prevent him from experimenting with animated cartooning, either silent or with sound, if he wishes to—and has the patience that the work requires.

Viewed from the photographic angle, all that is necessary is a camera that can be made to expose one frame (or picture) at a time, stop with the shutter closed, and wait until it is required to expose the next frame. There are several 16 mm. cameras available with hand-cranking mechanisms; one or two of them even have the required one-picture-per-turn movements; but even without this refinement, so long as they have the hand-crank, they can be used for cartooning. Any machine-shop can build a gear arrangement that will permit the single-frame work; the normal crank gives eight pictures per turn, therefore an 8:1 reduction gear will do the trick and give you one exposure for each turn of your crank.

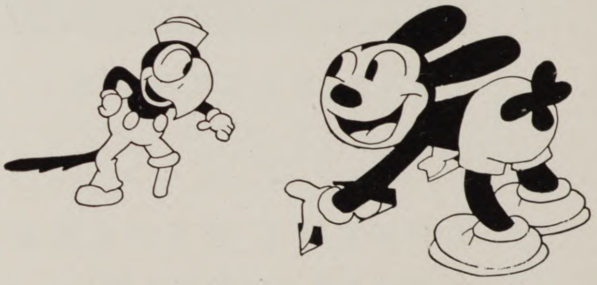
To photograph the cartoons, the camera is placed in a fixed mount, pointed down on a board upon which the drawings are placed, and focused so that its field exactly coincides with the area of the drawing, which, for convenience, should be 8x10 inches or larger. Over the drawing is placed a plate-glass cover in a frame hinged to swing up out of the way when the drawings are being changed, and which fits down over the drawings tightly and firmly enough to prevent any wrinkles; in our own camera-table at the studio we have, as an extra safeguard, a vacuum device which forces the glass down with a pressure of 1200 lbs. per inch. This, of course, is unnecessary in amateur installations, as is our motor-drive, which works through a clutch, and exposes one frame each time a button is pressed. A frame counter, however, is necessary, especially with sound. An ordinary Veeder counter will serve this purpose. It can be attached to the single-picture crank, and should have room for at least four figures.



The camera set-up used in making animated cartoons

As to the exact method of "sounding" cartoons, perhaps the best suggestion might be gleaned from a description of the way we make our "Oswald" and "Pooch" cartoons.

In the first place, we have to have an idea to start with. From this idea I prepare a scenario. I cooperate with the musical staff in this, fitting the action and the music together. The scenario is partly drawn and partly written; it has on it the "key drawings," which are merely rough sketches of the scene, suggesting the action. Below each drawing, I describe the action. Above it is the musical outline. This is worked out so that we know definitely that any specified action will occur at a certain bar of music—or, to put it the other way around, that at that definite bar of music, a definitely known action will be taking place. The standard projecting-speed for talking pictures—either 35mm. or 16mm.—is 24 frames per second. Therefore, we use 24 frames as our unit, and arrange our music so that we begin a new bar each second—or 24 frames. By this means, we can be sure that if we have a certain sound effect in bar No. 100, its accompanying action will be made in frame No. 2400.



Each character is drawn on a seperate "cell"

Having worked out the action and music scenarios so that they synchronize perfectly on paper, and so they make the film-footage required for our release, we are ready to proceed. The music department makes its orchestral arrangement of the music, and records it. Meanwhile, the cartoon department makes its cartoon film; when both are completed, we know beyond doubt that the two will fit together perfectly. If someone is to kick Oswald, for instance, we can rest assured that the kick's accompanying "Klunk!" will be in the sound track, exactly in its place to the frame, even though the sound is recorded as much as three weeks or a month before the kick is drawn and photographed.

So much for that: now for the cartoon itself. As anyone who has an amateur camera knows, moving pictures consist of a series of tiny still photographs taken in succession on a strip of film, with each picture just a little different from the one before it. Well, in making a cartoon, we merely draw these pictures and photograph the drawings in order: the result on the screen is the same—an illusion of movement. The movement can be made as fast or as slow, as smooth or as jerky as we wish merely by the spacing of the drawings of the individual phases of motion, and by the number of frames allowed for each drawing. For the smoothest action, use closely-spaced drawings, allowing one frame per drawing. For jerky action, space the phases farther apart. To speed the movement, use one frame per drawing; to slow it down, use more frames for each drawing. The best cartoon practice, I think, is to use moderately-spaced phases of movement, and photograph them giving each drawings two frames. A great help in learning animating—as this business of making these moving drawings is called—is the studying of slow-motion films taken of natural movements, which is easy with many of the better 16mm. cameras! study both the film on the screen, and the film itself, frame by frame. Study both slow-motion and normal films—and then work hard, and you'll have it.

From our scenario, we begin to get into the specialized work of mass-production. One man specializes on the backgrounds. These are made on paper, usually as combination pen-and-ink and wash drawings. We cannot go in for too fine gradations, but confine ourself to a fairly limited scale of grays, in addition, of course, to black and white.

At the top of these paper-drawn backgrounds are two punch-holes, very accurately spaced. These fit over standardized pegs on the background-artist's board, corresponding pegs on the action-artist (or animator's) board, and upon the camera-table. They are what keep the figures in their proper places on the background.

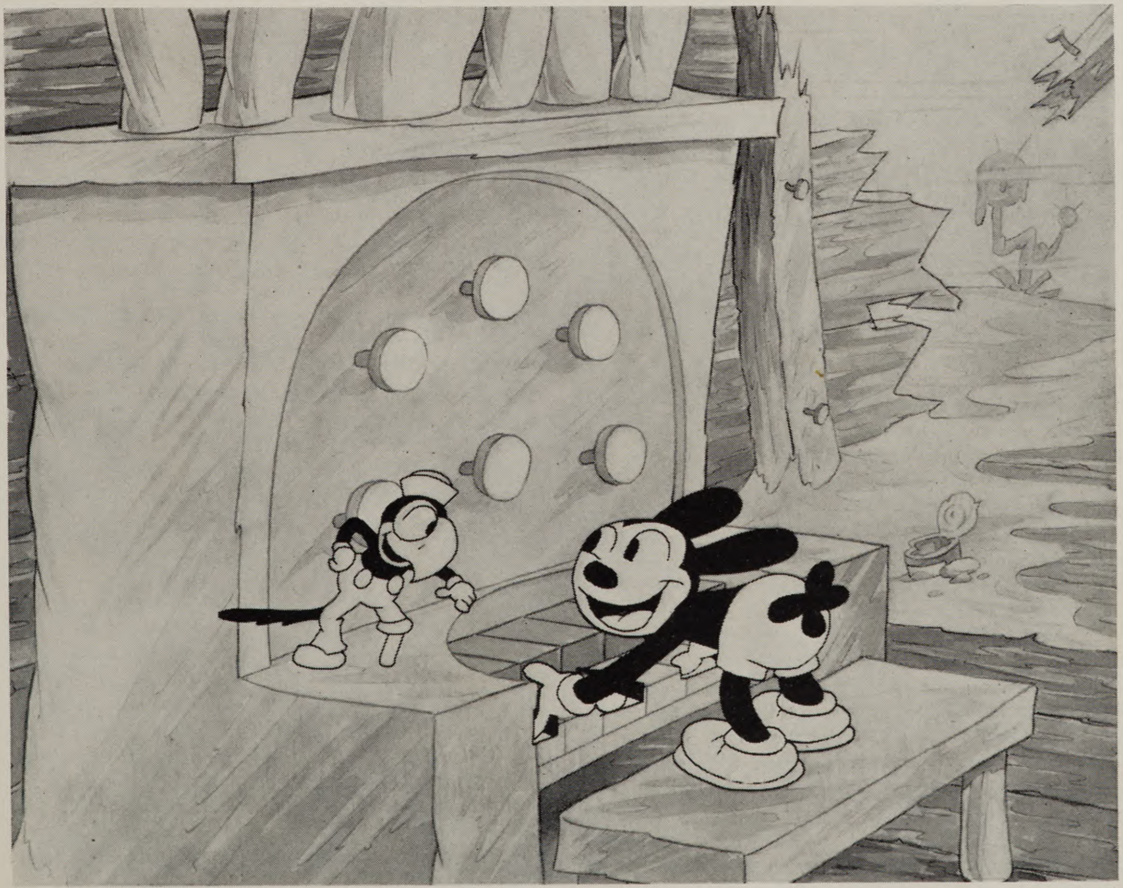
The figures are first drawn on paper, in pencil, by the animator. Then they are traced in ink onto thin celluloid. The black areas are filled in—on the back of the "cell"—with India ink, while the white areas, through which the background must not show, are similarly backed with Chinese white. The areas around the figure, of course, through which the background is to be seen, are not backed at all. When used, these cells can be cleaned with ordinary soap and water, and used again and again until they become too scratched and dirty to be usable.

Now, of course, there are a number of short-cuts in animating. For instance, if we have Oswald in a scene where he is standing still, but talking, or gesticulating, we don't need to draw his body every time: instead, we draw him a body on one cell, and his head or arms, or whatever moves, on other cells; thanks to the registering-pegs, the two will be in their proper relation, and we won't be embarrassed by seeing "Ozzie's" body standing still, and his head talking busily away somewhere else.

Similarly, if we have more than one character that is to move in a scene, each character may be drawn on a separate cell—or cells. Too many cells, of course, will spoil the picture, but we can safely use three or four at once—sometimes more, if the cells are clean, and the light good.

When a character is to repeat a movement, we can naturally use the same cycle of cells as often as may be desired; similarly, when, for instance, we want hundreds of animals to pour out of a house, we can make a cycle for them, drawing them all on the same cell, and using a series of such cells for the cycle, which can be continued indefinitely.

(Continued on page 41)



The "cells" superimposed on the background for completed picture

Skylarking with a Camera

by GEORGE W. HESSE

AT ONE time or another every cine enthusiast who has ever done any flying has attempted to capture the zest and thrills of his flight with his camera. But what a keen sense of disappointment when one's first air-scenes are flashed upon the screen and they are blurry, dull, jerky and very unlike the crisp, clear, breath-taking stuff one sees in the theatre.

The amateur invariably concludes that he lacks some piece of equipment which enables the professional to secure such wonderful scenes. A special camera, film or lens which is beyond the reach of one to whom cinematography is a hobby. And so he regretfully gives up all hope of filming in the sky and bemoans his fate.

Not at all. The professional results have been obtained because of years of study and experimentation. Thousands of dollars have been spent in learning the secrets of air filming. Special cameras, lenses or films aren't a necessary requisite of successful aerial photography. There is no reason why the the amateur cannot secure the less spectacular scenes equal to those taken by his professional brethren.

Here only a few salient features will be stressed to set you upon the road to successful picturization of your aerial jaunts. Much has been written on what to film or how to scenarize your aerial adventures. Not enough has been written on how to go about the filming. We will confine ourselves to the "how" and the "what" will be purely incidental.

Any camera can be used. If you have a very complete model with several lenses, choice of operating speed and other refinements, so much the better. But don't let the lack of such a camera deter you. Remember a two dollar Brownie in the hands of an expert is often superior to a two hundred dollar Graflex in the hands of a tyro. The same holds true with aerial work, but you must, at the outset, realize the limitations of your equipment and not be disappointed if you fail to secure something which is beyond the capabilities of your instrument.

Filming in the air is precisely the same as filming on Terra Firma. Focusing is the same whether you use the camera horizontally or vertically. Your lens will always be kept at infinity except, of course, if you wish to photograph some part of the plane in which you happen to be. As always your lens stop will depend on prevailing light conditions. However, in general, you will require a smaller stop for any given light condition as compared with filming under the same light condition on the ground.

For example, suppose you were shooting a rather fetching landscape, say a pretty composition of field and meadow and trees. Fleecy white clouds are in the sky and the sun is bright. Your lens is admitting an abundance of light. You would, under these conditions, probably be stopped down to f. 16. On the same day you make an airplane flight with the intention of filming another plane. Lighting conditions are unchanged. However you are photographing a goodly portion of sky and are thus admitting still more light to the film. In order not to overexpose you would have to stop down to about f. 22, a stop scarcely ever used when filming on the ground.

Don't be amazed at such a small stop . . . it may even be too large under certain conditions. If you are at all in doubt as to the stop to use, an exposure meter is a very useful adjunct to good filming. **Rely on it.** Don't think that the reading is too small. A Cinophot or a Justaphot is an accurate scientific instrument and far supersedes the eye when it comes to measuring and judging reflected light, the light you photograph by.

Most failures when it comes to filming in the air are attributable to minor faults of technique. But the minor faults add up and soon the result is far from what it should be.

A filter is a great aid in securing crisp, clean-cut detailful pictures. When shooting in the air it is an absolute essential. You need a "minus blue" filter in order to cut the ever prevalent haze. Especially over cities there is always a haze due to dust and smoke from factories not to mention the naturally present water vapor. All this haze would catch, reflect and dissipate the light coming from the scene. This would cause a general flatness and a muddying up of detail. It can be circumvented to a considerable extent by the use of the proper filter.

The proper filters, as before mentioned, are the "minus blue" filters. They are yellow in color and are sold under a variety of trade names but are usually referred to as the Wratten "K" series. There are four in this series, the K1, 1½, 2 and the K3, each one being more dense than the preceding one with the K3 the most dense of the lot. Another "minus blue" filter is the Wratten "G", a yellowish orange filter more dense than the K3. The "G" filter has an exposure factor of approximately 5 with panchromatic film. With orthochromatic film it, of course, has a factor of approximately double.

For extreme overcorrection and for cutting the most amount of haze we must use the red filters, the 23 or the 25A. They can be used only with Super-sensitive Panchromatic film and with this film have a factor of about 6.

Never use orthochromatic film in connection with sky work. Use Pan or Super Pan and you can, with the aid of filters, secure the finest results obtainable. Besides, the colors you will photograph from the sky, the greens, browns and blues of open country and water and the dull greys of the cities will be rendered with more contrast by the Pan emulsion. The Pan film can't do it alone, it must be helped out with a filter. The filter, of course, holds back the light which comes from the haze (blue light) and permits the other light to penetrate through it, the filter, to the film.

When actually filming do not rest the camera on any part of the plane. If you do vibration from the plane will be transmitted directly to the camera and produce a very hard-to-look-at result. Hold the camera firmly in your hands. In this way your body and arms will damp the vibrations.

Don't attempt to film straight down, unless you are quite high in the air, say at least a thousand feet. Below that the speed of the plane in relation to the ground is too great to permit the proper registering of details and all the objects will be blurred. The higher you are, of course, the smaller will be the image of any given object. To secure a large image you would have to use a telephoto lens.

In any event a vertical shot straight down produces a rather uninteresting result. It is far better to film away from the vertical, either in the direction the plane is traveling or in the opposite direction. A full side shot from the plane is another bad thing to attempt, unless you are very high in the air, resulting again in a small image. The side shot, unless of another plane, would also produce a hard to look at effect.

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Transparency Projection Process

(Continued from page 15)

Once photographed, the negative, for best results, must be developed especially for transparency work. It must be perfectly developed, and held rigidly to definite standards of gamma and density. The print, too, must be made painstakingly, and exclusively for this work.

In making the actual process shot, the greatest care must be exercised. The projector and camera must be in perfect condition—and maintained exclusively for this work. The lighting must be arranged with special care. Every detail must, in a word, receive the most painstaking attention.

In my own department, I personally photograph the background plates whenever this is at all possible. If such plates must be made elsewhere, by other cinematographers, I supply them with extremely detailed instructions, and see to it that their equipment is in the requisite state of perfection.

For the development of our negative, we maintain a special laboratory, entirely independent of the studio laboratory. This laboratory, though small, operates with a precision and a degree of control impossible in studio or commercial laboratories handling the usual volume of production. In our developing-machines, for instance, the strength of the solutions is automatically maintained at a predetermined standard, the flow and filtering thereof arranged so as to insure absolute physical and chemical purity of the solutions, and cleanliness of the apparatus. The temperature is automatically held within one degree of whatever temperature may be desired. Most important of all, the developing-machines themselves are unique in that they permit absolute control of the time and speed of the processing; any phase of the process may be accelerated or decelerated independently of any other part of the machine in order to produce the precise effects desired.

The printing is done with equal care, on either our rebuilt Bell & Howell continuous printer or special optical printer. By these means we are enabled to produce background plates of the exact quality needed for any individual scene. The negatives are almost invariably photographed sharp, so that we can either use them as originally made, or, through the optical printer and the customary control in the exposure and development of the positive, produce prints with any degree of softness, diffusion, or contrast that may be desired—yet without impairing the negative for use in further scenes.

When photographing the composite picture, I supervise the lighting balance myself, closely collaborating with the production cameraman at all times. Expect in such cases as occur when the process shots are all made at the end of a production's schedule, and the production cameraman transferred immediately to another assignment, I always prefer to have the man who has photographed the production work with me in making the transparency scenes. In that manner, we can between us (and to date the production cameramen have all cooperated perfectly with me) match the lighting of the projected scenes to that of the remainder of the production perfectly, without sacrifice of the type of lighting needed to insure a successful transparency shot.

By virtue of this close and friendly collaboration, and by the unusual degree of control possible in our laboratory processes, we are able to match successfully any style of cinematography. By means of our exceptional laboratory control, we are able to take a background made by a man who works in a style radically differing from that of the production cinematographer in question, and match the remainder of the production with absolute fidelity, for we can alter the contrast, density and general quality of the background plate to suit the scenes into which the composite shot is to be cut. We have successfully made backgrounds photographed on rainy days appear to have been made in the sun, and vice-versa. The only thing impossible is to remould a day scene into a night-effect, or the night-effect into a day scene.

We have, naturally, built up a sizeable library of background plates of all types. These negatives can be used repeatedly whenever a background of their particular genre is desired, for, as has been pointed out, we can alter the quality of prints optically, and through the use of different foreground sets and treatment, we are able to alter the composition of the plate as well, using all of it for one picture, a part for another, another part for a third, or using the same part—with different foregrounds—for successive productions. I have recently, for instance, employed the same shot of a group of dancers on a ball-room for several different pictures; yet we defy anyone to recognize that the same background has served in both instances.

I have, for the past three years, been working on a similar process to enable the use of still photographs for the same purpose. The results are proving extremely satisfactory, although the process is still in the experimental stage. The same facility in altering composition, quality, etc., is possible with this method, and it is even possible, in some instances, to introduce a limited degree of movement into parts of this motionless background.

It is only natural to decide, at this point, that such a process must, if adopted, inevitably mean the elimination of sets, of art-directors, or extra-players, and of many other workers. Such is not by any means the case. Such a process inevitably has many limitations; it is a valuable supplement to conventional methods, but by no means a substitute. No matter how completely we perfect such a process, we must still have sets for a great part of our action. We must still, then, have art-directors, carpenters, painters, decorators, set-dressers, and property-men to make these sets. We must still have extra-players to dress our sets. We must still have electricians to light them.

The real utility of such a process is quite different. Being limited, as it is for the most part, to serving as a background for down-stage action, it will furnish backgrounds for scenes which might not otherwise be made. For instance, let us suppose that our principal players are to meet for the first time in a hotel lobby, but that this set is not required in any other part of the picture but this one scene. In the normal course of production, such a set, required only far a single scene, would be regarded as too costly—and accordingly, would not be built. The action would be shifted to some set already built, or bridged over by dialogue. By means of this process, however, an ordinary 8x10 still of some such set previously constructed might be used as a transparency background-plate—and the scene made as written, adding several thousand dollars worth of production value to the picture at a very insignificant cost. If, on the other hand, a major part of the action was to take place in such a set, the only logical thing to do would be to build the set, for only thus could the set be properly dressed with both properties and extra-players to make the effect realistic, and only thus would the director and cinematographer have the requisite freedom in playing their action on the set.

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Hansen Withdraws from "Rico"

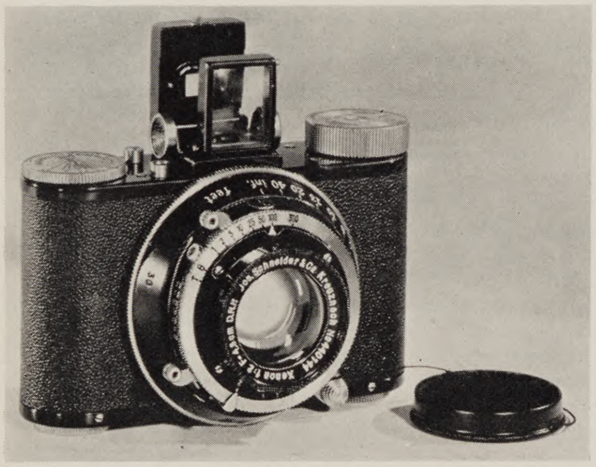
HAVING accepted an offer from the Fox Film Corporation to assume the position of director of sound recording, E. H. Hansen announces his complete withdrawal from the ownership and organization of the Radio Installation Company, manufacturers of "Rico" sound recording equipment. Announcement from this firm states that the concern will continue as formerly under the direction of Wilford Deming, Jr.

New Kodaks From Eastman

THE Eastman Kodak Company announces five new Continental model still cameras to the American trade. These cameras are manufactured in the Stuttgart, Germany, factory of the company known as the Dr. Nagel works, and meet the desires of the "advanced amateurs" of America who are turning more and more to the European type of smaller camera.

The five new Continental Kodaks are known as the Kodak Pupille, Kodak Recomar 18, Kodak Recomar 33, Kodak Ranca and Kodak Vollenda. They use Kodak film, roll or pack, depending upon model.

The Pupille is a compact instrument with an f.2 lens. The over-all dimensions of this camera are 3¾ inches by 2⅝ by 2 and its weight is 14 ounces. In operation it is held close to the eye, recording what the eye sees.



The Kodak Pupille Camera

The Pupille can be focussed to take pictures at distances as short as 2½ feet. A detachable periscopic range finder that comes with the camera determines distances. The speed of the lens—five times as fast as an f. 4.5 anastigmat—makes the photographer practically independent of light conditions.

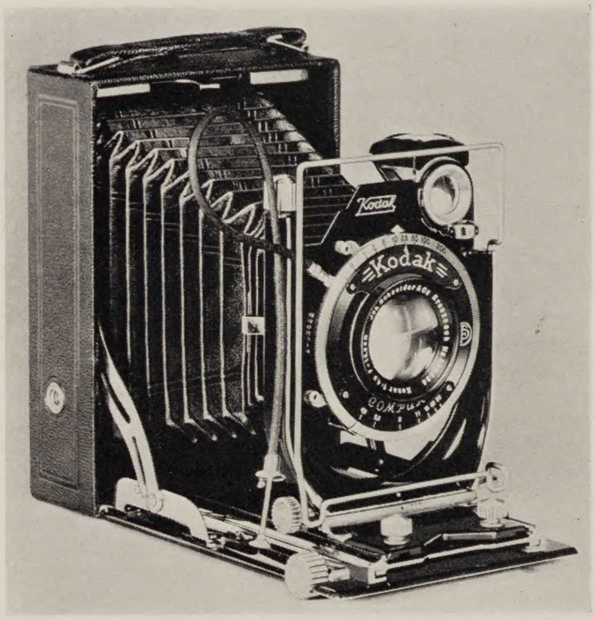
Supporting the lens of the Pupille is a Compur shutter, with a range of speeds from 1 second to 1/300, in addition to bulb and time. A revolving scale built into the camera shows the depth of focus obtaining at any focussed distance with the various diaphragm openings. For instance, with the camera focussed at 13 feet and the diaphragm open at f. 5.6, the indicator would show everything farther than 10 feet and nearer than 20 feet from the camera to be in focus.

The direct-view finder is self erecting. The lens is brought into picture-taking position by a precision spiral mount, controlled by a lever. When the range finder is in position, its eye-piece is just beside the view finder, noticeably convenient for use in obtaining the accurate distance reading necessary for close-up photography with wide diaphragm openings. A detachable cable release will be supplied with the five Continental Kodaks. The capacity of the Pupille is 16 exposures, 13/16 by 1 9/16 inches, on "vest pocket" (Number 127) roll film.

The two Kodak Recomar models, differing only in size, will be imported for the benefit of photographers who wish to use film packs or plates or cut film and thus to gain access to the variety of color-sensitive and speed emulsions available in those forms. The lens is an f. 4.5 anastigmat. The speeds of the Compur shutter equipping the Recomar range from 1 second to 1/200 for the Model 33 and to 1/250 for the Model 18, with time and bulb.

The Recomar 18 uses 2¼ by 3¼ film packs, 2½ by 3½ cut film, or plates 6½ by 9 centimeters. The 33 uses 3¼ by 4¼ film packs or 9 by 12 centimeter cut film and plates.

A self-timer is built into each Recomar, permitting the photographer to get into the picture himself if he so desires. The direct-view finder is of the European wire frame type.



The Recomar Camera

In addition there is a reflecting finder, adjustable for horizontal or vertical pictures. A spirit level appears on the cameras. Focussing is done either with a scale and micrometer screw or with the ground glass back accompanying each Recomar. A double bellows extension—with a completely rigid bed—and convenient provision for using supplementary lenses are other features of the Recomar. Full double bellows extension for the Recomar 33 is 11 inches, with slightly less extension for the Recomar 18. The versatility of the Recomars enables them to be used for copying as well as to meet the more usual requirements of photographic amateurs.

The Ranca has an f. 4.5 anastigmat lens. In size and weight the Ranca is almost identical with the Pupille. Picture size is the same, with sixteen images recorded on the ordinary 8-exposure of "vest pocket" film. The lens, mounted in a Pronto shutter possessing a range of speeds from 1/25 of a second to 1/100 and with time and bulb, moves into picture-taking position on a spiral mount. Focussing range is from infinity down to 3½ feet. The Ranca has a self-erecting direct-view finder and a built-in self-timer.

The Vollenda is slightly larger (3 inches by 4½ by 1¼) than the Ranca in dimensions, but its picture size is the same. The anastigmat lens equipping the Vollenda is an f.3.5. The lens is put in picture-taking position by a hinged front and a bellows extension which automatically spring into rigid position when a button is pressed. The Compur shutter has speeds from 1 second to 1/300, and time and bulb. The focusing range goes down to about 3 feet.

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Why Blondes?

(Continued from page 12)

ever, when the wigs are properly made and applied, this prejudice has no foundation. It has been my experience, too, that this objection to wigs is never found among the people who actually wear the wigs, but among the executives—producers, supervisors and sometimes directors; men who are seldom in a position to have had personal experience with the merits or demerits of wigs, and whose objections are motivated by a fear that the production might suffer by the employment of such an expedient.

If wigs were what they were only a few years ago, these objections would certainly be justified; but within the last few years, wigs have not only been immeasurably improved, but absolutely perfected. This is, I realize, a very broad statement to make, but it is none the less true. From my own personal experience I can state that in no instance where a properly made and applied wig has been used has the result been in the slightest degree short of absolute satisfaction. As an example, in one production upon which I worked a short time ago, no less than seven members of a cast of nine—among them some of the greatest players in pictures—wore wigs; and in none of the many reviews of the picture was this fact mentioned. It was not, so far as I could learn, even noticed by the critics, most of whom knew the players more or less intimately.

The credit for this perfection of wigmaking belongs entirely to those splendid artists and gentlemen, Ernest and Percy Westmore. These men are not merely wigmakers, but artists. They come of a long line of wigmakers, and they have so perfected the technical and artistic phases of their craft that their products defy detection, not alone by the eye, but by the camera as well.

Therefore, in cases where the natural hair of a player is not suited to such alterative treatments as dyeing or bleaching, or has been injured by incompetent manipulation, a wig is not only the obvious recourse, but an extremely satisfactory one.

A wig may, naturally, be of any color or texture desired; but it may also be of any desired length—a feature which gives the wig a decided advantage over natural hair. For if a player whose natural hair is long is cast, let us say, in a part requiring bobbed hair, she need not sacrifice her hair for the part, for wigs may now be worn over long hair without increasing the apparent size of the head. Conversely, if a bobbed-haired player is cast in a long-haired role, she need not grow her hair out for the part, for the wig will prove entirely satisfactory. Furthermore, the wig may be made either to match the individual's natural hair in every respect, or in any shade, color or texture that will most perfectly set off the wearer's personality, or suit the part. There is, too, an added convenience in that the wearer need not spend an undue amount of time in the hairdresser's establishment, for the wig can be placed on the block in the makeup shop, and dressed during the night, to be ready for wear in the morning, at which time it is easily and quickly applied.

In the far more rare instances where men are required to alter the coloring of their hair, a wig will again serve the purpose effectively, while, of course in cases where the man's natural hair is too thin, toupees are frequently and successfully employed.

To briefly summarize the matter, wherever a change in the coloring of a player's hair is indicated, either to increase that player's photographic or personal effectiveness, to develop new facets of the personality, or to complete a definite characterization, two methods are possible: the coloring of the natural hair may be altered by means of dyes or bleaches, or a wig may be used, with perfect satisfaction in either case. There is, however, always this proviso: that whatever manipulation is done—whether it be the application of coloratives to the natural hair, or the creation and application of a wig—must be done by the most competent of operatives only. When this precautiton is followed, everyone concerned—the producer, the director, the cinematographer, and the individual player—can be assured of perfect satitsfaction and absolute safety. Moreover, under the guidance of such specialists in this art as the members of the Motion Picture Makeup Artists Association, one can be certain of obtaining not alone the best of such treatment, but also treatment that will make the most of one's actual and photographic personality.

Sound Cartoons

(Continued from page 37)

When a character is to walk across the screen, we can use a walking cycle, with multiple registration-punches to give him the movement; of course, in this case, the cells must be long enough so that their edges don't come into the picture at either end of the walk. When, on the other hand, our character is to walk, but remain in the same place, while the background flows past him, we can use an ordinary walking cycle, while the background is drawn on a long roll of paper, and moved by, a sixteenth of an inch or so at a time. This type of movement must, of course, be handled very carefully, so that the background moves naturally, and does not appear to skid by under the character's feet.

Photographing the drawings is simple. I have already described the camera-set-up; the lighting may be either by Cooper-Hewitt mercury-vapor tubes or by incandescent light. We use the latter; I think that for amateur use a pair of the new "Photoflood" bulbs would be excellent. The only requirement as to lighting is that the field be illuminated evenly, and that there be no reflections, either of the lights or of the camera and its supports, in the cover-glass.

When it comes to "sounding" the amateur cartoon, there are several methods. In the first place, bearing in mind the way I have described that we allow 24 frames to the bar, you can, with some experimenting, synchronize your cartoon to existing records, either the 78 r.p.m. commercial records, the new 33⅓ r.p.m. "long-playing" records, or the 33⅓ r.p.m. theatre sound-effect records made by several of the photograph companies. The 33⅓ r.p.m. records are the best, as they will last long enough for a 400-ft. reel, and, too, most of the 16mm. sound-projectors are made to take them. In addition, you can record your own sound on these records by means of the new Victor, R. C. A., General Electric and Greybar home-recording phonographs, or through one of the several agencies that specialize in making sound-effects for 16mm. films. If you haven't a sound-projector, it is possible, though difficult, to synchronize your ordinary projector with an electric phonograph. The results aren't, of course, perfect, still—it can be done, with patience.

There, in a few words, is an outline of sound-cartooning. It is difficult, and requires patience—but it provides a deal of enjoyment, and a type of film that is rarely seen on amateur programs—and therefore doubly welcome to home-movie sated audiences.

◆

A Good Record

TWO years of daily operation without a single interruption during a performance and without having even been inspected by a service engineer is the record established by a Photophone Type F sound reproducing unit in "The Imperial Talkies" theatre, operated by Madan Theatres, Ltd., at Bangalore, India, according to a letter addressed to the foreign department of the RCA Victor Company by A. W. Smith, Manager.

Mr. Smith's letter was written on the second anniversary of the installation of the Photophone apparatus in his theatre.

EQUIPMENT PRIZES . . .

to be given winners in the

AMERICAN CINEMATOGRAPHER

$1,000.00

Amateur Movie Contest

In addition to the four cash prizes, announced on the opposite page, the following prizes will be awarded by various equipment manufacturers and dealers:

The BELL & HOWELL COMPANY will also present two equipment prizes—First, a choice of a Filmo 70DA Camera, listed at $280.00, or a Filmo Model J. L. Projector, listed at $298.00. Second, a choice of any Standard Cooke Telephoto Lens, priced from $60.00 to $95.00. To be given to prize winners who made their pictures with a Filmo. The EASTMAN KODAK CO. will present a Model K Cine Kodak, with a f. 1. 9 lens, complete with carrying case, priced at $150.00, for the finest example of photography in an out-of-doors picture regardless of whether it wins a cash prize or not and without consideration of story subject. MAX FACTOR MAKEUP STUDIOS will present one of the famous Max Factor Make-up Kits, completely equipped, to the winner of first prize of $500.00. HOLLYWOOD FILM ENTERPRISES, INC., offers a Model B Cine Voice, Home Movie Talking Picture Machine, complete with carrying case, priced at $129.00, to be given to that person or Amateur Club, located in California, who enters the best 16 mm. or 9½ mm. picture from California, regardless of whether the picture wins a cash prize or not. In other words, the prize goes to California's best entry. This home talkie equipment may be attached to all projectors, either 16 mm. or 35 mm. It makes any projector a talking picture machine. HOME MOVIE SCENARIOS, INC., offers two prizes as follows: To the winner of first prize of $500.00, one Scenario (choice of entire group), one H.M.S. Matte-box, choice of any H.M.S. Filter, and one H.M.S. Scene Slate. To the winner of second cash prize of $250.00, one H.M.S. Matte-box and choice of any H.M.S. Filter. In case the picture winning first prize is made from an H.M.S. Scenario, an additional cash prize of $100.00 will be paid by Home Movie Scenarios, Inc. If second prize is made from an H.M.S. Scenario, an added prize of $50.00 will be awarded; and an added prize of $25.00 will be given winner of third prize if made from an H.M.S. Scenario. METEOR PHOTOLIGHT COMPANY will present the winner of FOURTH cash prize the following valuable lighting equipment: A Meteor Double Photolight complete with two 500 watt NERON bulbs, retail price, $30.00, a Meteor Photolight Tripod model, complete with NERON bulb, retail price, $18.00, and a Meteor Photolight Table model, complete with bulb, retail price $13.50. Value of prize, $61.50.

AND—MORE PRIZES WILL BE ANNOUNCED

YOUR OPPORTUNITY!

The AMERICAN CINEMATOGRAPHER now offers the greatest opportunity ever given the AMATEUR MOVIE MAKER to win recognition and cash. ¶ A total of **$1,000.00** in **CASH** prizes is offered by this magazine to the winners of the Amateur Movie Making Contest announced in the October issue. This contest is sponsored by the American Society of Cinematographers, an organization composed of the world's leading professional motion picture cameramen. If you want to win recognition, as well as cash, read the rules below and send your entry. (See opposite page for additional equipment prizes)

COMPLETE RULES OF THE AMATEUR MOVIE MAKING CONTEST

The American Cinematographer will present a prize of $500.00 for what its judges consider the best 16 millimeter or 9½ millimeter picture submitted in this contest. $250.00 will be given as second prize; $150.00 as third prize; and $100.00 as fourth prize, a total of $1000.00 in prizes.

This contest is open ONLY to AMATEURS. No professional cinematographer will be eligible to compete. It is a contest solely for the amateur, either the individual or the club.

The contest officially opens November 1, 1931. The contest ends at midnight of October 31, 1932. All pictures must be entered by the closing date or they will not be considered. Entries mailed or expressed bearing the date of sending will be accepted if they reach THE AMERICAN CINEMATOGRAPHER office after October 31, 1932, providing the date shows they were sent before midnight of October 31, 1932.

Pictures submitted in this contest will be judged upon photography, composition, direction, acting, cutting and entertainment value. And only silent pictures will be eligible for the contest. The judges, whose names will be announced later, will include outstanding and widely known Cameramen, Directors, Actors, Writers and a group of nationally known Motion Picture critics from some of the best known newspapers in America.

The decision of the judges will be absolutely final, and there can be no appeal from their decision. Announcement of the awards will be made as soon after the close of the contest as possible and checks will be mailed the winners.

Pictures may be submitted either by individual amateur movie makers, or they may be submitted by Amateur Movie Clubs. However, they MUST BE photographed on 16 millimeter or 9½ millimeter film. Accompanying each entry must be a sworn statement to the effect that no professional cinematographer assisted in the making of the picture. No pictures will be accepted which were photographed on 35 millimeter film and then reduced to 16 millimeter.

This contest is open to amateurs and amateur clubs anywhere in the world, with the following conditions.

Only Bona Fide Subscribers to the American Cinematographer Can Compete

If you are a paid-up subscriber to THE AMERICAN CINEMATOGRAPHER you are eligible to enter the contest. If you are not a subscriber just send in your check for a year's subscription and you are eligible.

In the case of Amateur Clubs the following rules apply:

If a club with a membership of 20 or less wishes to enter a picture, the club will have to have a minimum of 5 subscribers among its members. Any club with more than 20 members will have to have a minimum of 10 subscribers among its members. For any further information you may desire, write the Editor of the American Cinematographer, 1222 Guaranty Building, Hollywood, Calif., or consult your photographic supply dealer.

IF YOU WISH TO ENTER THIS CONTEST AND ARE NOT A SUBSCRIBER, MAIL COUPON TODAY

American Cinematographer, 1222 Guaranty Bldg., Hollywood, Calif.

Enclosed please find Check, or Money Order, for $3.00 ($4.00 foreign) for which kindly enter my subscription to THE AMERICAN CINEMATOGRAPHER for one year:

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It is understood that this subscription makes me eligible to enter your $1000.00 Amateur Movie Contest.

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Chicago Pupils' Health Play Recorded by Movie Camera

A MOTION picture entitled "Grandfather Molar," showing the presentation of a dental health play by pupils of the Eugene Field School, Chicago, was given its premier showing recently before the bureau chiefs of the Chicago Board of Health, with the president of the board, Dr. Herman N. Bundesen, at the movie projector.

The movie depicts the story of the preparing of the dental play—how the desire for producing the play grew out of a motion picture health lesson, how the scenario was selected, and scenes and properties built or collected—and then shows the play itself as it was given in the school auditorium.

The picture was made with an amateur Filmo movie camera by W. F. Kruse, head of the Educational Department of the Bell & Howell Company, and Dr. L. W. Morrey, in charge of the dental service of the Chicago Board of Health. It was produced under the joint sponsorship of the Chicago Board of Health and the Chicago Dental Society.

The film conveys health information in an unusually interesting form to every school child who sees it. It will also be of great service, first, in inculcating the idea among schoolmen of teaching health as an integral part of the school curriculum; second, in illustrating to them how easily this sort of instruction can be furthered by the presentation of health plays as school projects; and, third, in showing teachers and pupils, by means of the movie itself, how readily such plays can be produced and presented.

Following its presentation before the Chicago health board chiefs, the movie was shown at a meeting of the Illinois State Dental Society at Springfield, Ill. before the Chicago Dental Society in Chicago; and at the National Council of Parents and Teachers at Minneapolis. It will shortly be made available for showing to teachers and pupils the country over. Applications for securing the film on loan may be addressed to the Chicago Dental Society, 185 N. Wabash Ave., Chicago. It is planned to loan it free to responsible schools and organizations on payment of transportation charges.

◆

Screen Resurfacing

RESURFACING of motion picture screens by theatre personnel usually leads to unsatisfactory results, according to a report of the Projection Screens Committee of the Society of Motion Picture Engineers. Tests made by the committee showed that less reflection properties are restored to the screen when resurfaced by the theatre than when they are resurfaced by the manufacturer.

The tests showed that the reflection factor of 85% possessed by a new diffusing type screen is reduced to 60% after two years of use. When this screen was refinished by the exhibitor its reflection factor is increased to 65%, but when the same screen was refinished by the manufacturer the reflection factor was increased to 82% or only 3% less than its original factor of reflection.

"At first," says the report, "we were hopeful that surfaces could be renovated satisfactorily by spraying and painting with screens in place. However, it is our present opinion that resurfacing has not been generally successful as yet. It requires skill and experience and even with much care still leads to non-uniform reflection and cloudy effects which are obtrusively apparent. Whether or not methods will be later devised to eliminate these difficulties is problematical."

The report was read before the recent meeting of the Society of Motion Picture Engineers at Washington, D. C., by S. K. Wolf of Electrical Research Products, Chairman of the Projection Screens Committee.

AMATEUR Club Activities

Los Angeles Amateur Club

ANOTHER unusually interesting meeting of the Los Angeles Amateur Cine Club, Wayne Fisher, president, was held at the Eastman Kodak Laboratories on the evening of June 13. Mr. Don Jahraus, head of the Miniature Department of the RKO-Radio Studios, was the chief speaker of the meeting. He gave a fascinating talk on the making of miniature shots as done in the studios, and then offered to answer questions. If President Fisher had not finally stopped the questions, Mr. Jahraus would probably still be answering them, for many members are interested in trick photography. Two very beautiful reels in 35 millimeter were presented by John W. Boyle, former president of the American Society of Cinematographers. One of these reels was a travel picture depicting Sweden; the other Denmark, and both were in natural colors. One had a narrative sound track. Another interesting picture was a 16 millimeter subject furnished by Dan Clark, another former president of the American Society of Cinematographers. It was made while Mr. Clark was on location photographing a George O'Brien picture, and showed the actual making of a professional picture. The run-off of the winners in the monthly uncut film contest was staged, and Mr. E. F. G. Chapman won the grand prize.

◆

Portland Cine Club

MEMBERS of the Portland Cine Club, E. J. Schon, president, and August Benz, secretary, enjoyed one of the most pleasing and educational meetings in the history of the club recently when Mr. Allen C. Woolley, of Eugene, Oregon, was the feature of the evening. Mr. Woolley described a simple cine micrographic apparatus he has devised, and showed several subjects photographed with it. He also gave a detailed description of a new stop motion device and gave a demonstration of miscroscopic kodacolor and stop motion kodacolor of flowers. Mr. C. V. Bracher of the Oregon Game Commission, also showed some very interesting pictures on wild life in Oregon. An added feature was a film showing Death Valley and the Sierra Nevadas from the air. This was sent by the Los Angeles Amateur Cine Club. Incidentally, the Portland Club is doing a picture of Oregon which it is expected will be more than unusual.

◆

Greenbrier Club

ONE of the most progressive clubs in the country seems to be the Greenbrier Amateur Movie Club of White Sulphur Springs, West Virginia. The club issues a breezy little monthly publication called "The Spotlight," which is a real credit to the organization, and to Hal Morey, Editor and Club Secretary. The June issue was increased by two pages. Much enthusiasm was shown recently at the premiere of the club's latest film, "The Black Door," which is said to be of very unusual merit.

◆

New Berkeley Club

A GROUP of thirty amateurs recently met at Berkeley, California, for the formation of an amateur motion picture club. Harold Hock presided as temporary chairman and much enthusiasm was shown at the first organization meeting. Representatives of the San Francisco, Oakland and Richmond clubs were present and gave short talks. An attractive program was presented which included a demonstration of the new RCA 16 mm. sound-on-film projector.

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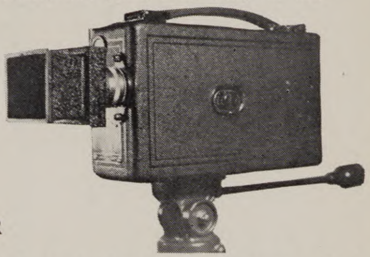

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Filmo Topics

THE AMATEUR movie maker will find much of interest in the June-July issue of Filmo Topics, the excellent little magazine which is published by Bell & Howell Company of 1801 Larchmont Ave., Chicago. If you want to receive this magazine free, just write the Bell & Howell Company, mentioning The American Cinematographer. The following is a partial list of contents of the current issue:

Better Vacation Movies

The second of a series counselling new (and old) Filmo owners in the use of their equipment.

So You're Going to Take Movies Abroad

A calendar of summer European events worth filming.-By Clara E. Laughlin.

A Seven Year's Dream

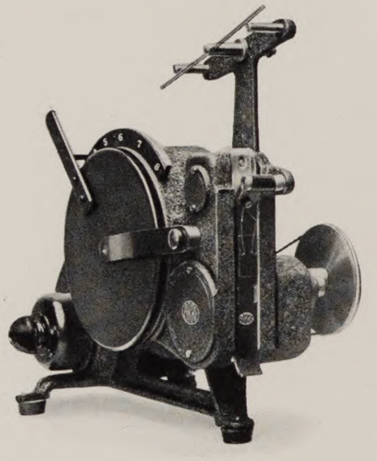
—has culminated in the introduction of the Morgana Color Process for FILMO Cameras and Projectors.—By Lady Juliet Williams (Inventor of the Morgana Process).

Getting the Crowd to Make a Movie

How a group of summer resort guests produced a photoplay.—By Harvey F. Morris.

◆

New Arri 16 MM. Step Printer



A NEW Arri 16 mm. Printer is now on the market for amateurs and small laboratories. It is very simple of construction and easy to operate. It has been the aim of the manufacturers to put out a printer which can be bought by every home movie maker and the price is accordingly, though it shows high-grade workmanship.

The capacity is 100 feet negative and 200 feet positive film.

Some of the features are: a clutch which can stop the moving mechanism any time immediately by disconnecting the motor from the moving mechanism.

The specially designed light control, which makes it possible to adjust the light to the varying density of the negative **while printing.**

Trick work and title printing can also be done; any number of prints, for instance, can be made out of only one negative picture.

The printer is driven by an universal motor and weighs only about 7 pounds. Fritz Reichel of 3915 West Third Street, Hollywood, is representing the manufacturers.

Skylarking With a Camera

(Continued from page 38)

The best speed to operate the camera at is above normal, say 24 frames per second. If you are fairly low or if the air is rough a speed of 48 or even 64 frames can be used to advantage. If you shoot at a speed other than normal, don't forget to change your lens stop accordingly.

If your meter indicates f. 11 for 16 frames per second and you are filming at 48 frames per second you are admitting but one-third as much light as at the normal speed. Therefore you will have to open the iris so as to admit three times the amount of light. In other words you would have to open up to about f 6.3.

If you are using a filter it will be necessary for you to open still further. Supposing you are using a "G" filter with a factor of 5. Then you would have to open up to f 3.5. Unless you were using a speed lens that would be your largest aperture.

From this example you can see another reason why the use of the regular or ortho film is not advisable. With ortho the factor would have been about double and the aperture needed would have been far beyond the limits of your lens.

Always shoot from inside the open window of a cabin plane. Do not attempt to hold the camera outside the window. If the terrific back-wash of the propeller doesn't tear the camera from your grasp, the vibration it will cause will make the resultant scene valueless. You can secure any angle of view you wish from inside the cabin so why risk losing your camera by holding it outside?

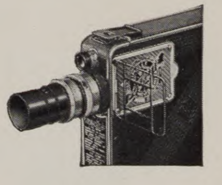
Tape your filter to the lens barrel. Doing this will prevent the vibration of the plane from causing it to jog about and perhaps tearing loose altogether. Too, a bit of tape on the diaphragm ring will prevent that from jogging about and changing the aperture.

The hours between 10:00 A. M. and 3:30 P. M. are perhaps the best times for air filming. The sum is rather high then and the shadows aren't so long and grotesque as they are earlier in the morning and later in the afternoon.

Since most of your filming will be done on regularly scheduled air lines it is well to remember that planes wait for no one and as a consequence you will often have to shoot under unfavorable conditions. If you can circumvent these conditions and secure a worth-while result you will get a greater thrill out of seeing it on the screen than can be given by any plane ride.

A 2-inch
FOCUSING
LENS
for the
SIMPLEX
POCKETTE
CAMERA

Announced last month, this lens is now ready, and offers an increased utility to owners of the Simplex Pockette Camera who will now be able to use this most compact of instruments for long distance work and for closeups in Sport, Travel and general cinematography. Further information on request.



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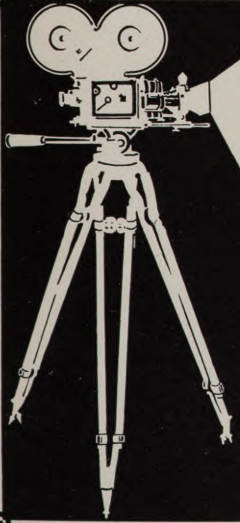

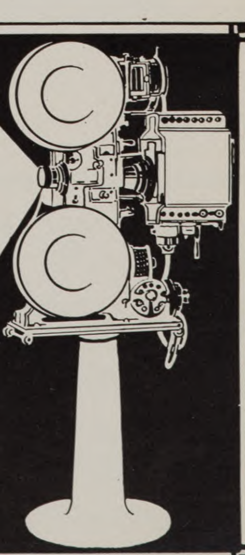

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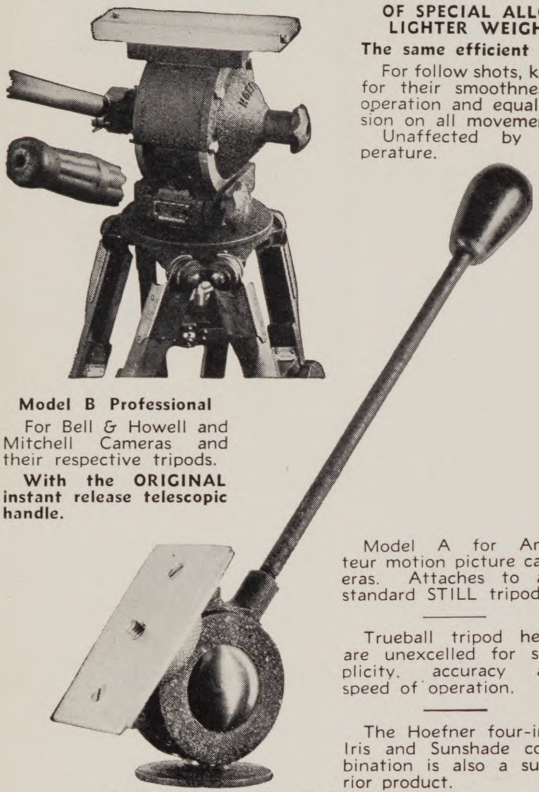

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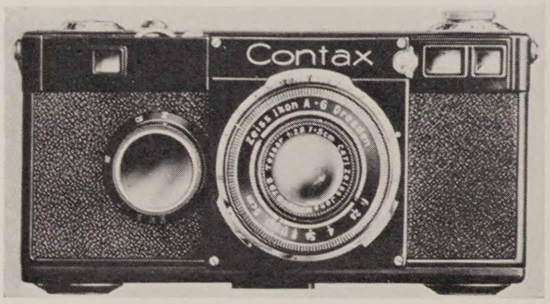
New Camera From Zeiss

FOLLOWING the trend of the still photographic times, Carl Zeiss, Inc., will soon place upon the market a new camera of the "miniature" type that should prove of interest to all still photographers.

This new camera is called the Contax camera and will use regular 35 millimeter motion picture film, which will enable the photographer to use the fast, gray-back film that is used in the motion picture cameras in the studios. The essential features of the Contax camera as given by the manufacturers follow.



The New Contax Camera

An all metal focal plane shutter with speeds ranging from 1/25th to 1/1000th of a second, also bulb; speeds minutely accurate, and dependable. The shutter, therefore, is not subject to climatic influences.

A long base range finder, built-in, and coupled ingeniously with the lens; it focuses the lens automatically with an accuracy at least equal to that of a reflex camera. It is not necessary to measure the distance and then set the lens; the distance meter does this in one operation. The object may be viewed right up to the last moment and focusing adjusted accordingly.

The film is moved automatically every time the shutter is wound, so that double exposures are impossible. A valuable saving and convenience here.

There are other features worth noting. Although it is so compact and light in weight (22 ounces), the Contax is very sturdy, being made throughout of a strong, light metal. It is cleverly designed, down to the smallest detail, to provide for the maximum convenience, dependability and service.

A complete range of lenses will be supplied for the Contax, and these lenses will be readily interchangeable. Standard equipment is the Tessar f:3.5 of 2" focal length, or the Tessar f:2.8 of 2" focal length. There will also be available lenses with apertures of f:2 and f:1.5, telephoto and wide-angle lenses, supplementary lenses for short-focus work, yellow filters, and sunshades. Developing, enlarging and printing apparatus will be furnished at a later date.

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Amateur Movie Making

(Continued from page 34)

is not greatly slowed down. The matter of camera-angles is also important; especially with telephoto lenses. The shutter-apertures of most amateur cine cameras are not only large, but they are fixed. Therefore, the amateur cannot do as does the professional, when faced with the problem of obtaining absolutely clear pictures of fast movements, and reduce his shutter-aperture to a point where the exposure is sufficiently short to "stop" the movement. Therefore the amateur, who is forced to be content with a fixed exposure-time of from 1/36 to 1/24 of a second, must either choose angles at which the relative motion of the image is small, or arbitrarily cut the exposure time by increasing the camera-speed. The larger the image, the greater the relative motion on the film; therefore if we are using a telephoto lens, at normal speed, it is unwise to attempt to photograph full-screen pictures of individual runners, discus-throwers, etc., (in which the motions of the body are extremely rapid) directly side-on. The best angle is about a ¾ front-view, for in this case the movement of the image across the picture-area is minimized, yet the angle is still interesting. If, however, this most desirable viewpoint cannot be secured, and the action must be photographed from the side, the only alternative is to speed up the camera or be content with a smaller image. In making follow-shots of races, of course, if the camera is held steadily on one runner, that runner's motion will be fairly well stopped, though at the expense of the background.

But the greatest aid in preparing for such events is experience. So—why not come fortified by some? Take your camera with you the next time you go to a ball game, a cricket game, a track-meet, or (best of all) if you attend any of the local Olympic try-out meets. Learn from experience of the problems involved in making such films from the grandstand **yourself**—and you will learn more than any article or book can teach, for no writer can fully visualize your personal equation. Then, if you come to Los Angeles, remember that Hollywood is not far off, and that a hearty welcome awaits you at the offices of THE AMERICAN CINEMATOGRAPHER, and that both Editor Hal Hall and I will be glad to meet you, and to aid you any way possible.

◆

Motion Picture Film

(Continued from page 30)

"fast" or "slow," "contrasty" or "long-scale," sensitive to light from various parts of the spectrum, and photographically responsive in still other significant ways. This control in emulsion making is responsible for the various types of motion picture film known within the industry.

For atmospheric control and other purposes, this typical film manufactory maintains the largest refrigeration plant in the world. Our readers may be interested to see in the next issue of the Cinematographer how the cold that is the product of this refrigeration plant, and the cleanliness that is a product of many precautions and activities, are as important a "raw material" of motion picture film as the cotton, the saltpeter, the sulphur, the camphor, the wood alcohol, the hides, the silver and the potassium bromide.

(To be continued)

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Morgana Color Process For Filmo Cameras and Projectors

FILMO cameras and projectors designed for taking and showing color motion pictures by the Morgana Color Process are announced by the Bell & Howell Company. This company states that it considers Morgana the best two-color additive process that has appeared.

In this process color is not inherent in the film itself but is obtained by special filters in the camera and projector in conjunction with special mechanism. Different types of mechanism are employed in the camera and projector respectively, the projector mechanism embodying a radically new principle never before applied to motion picture technique. It is this unique projector mechanism that is largely responsible for the outstanding results obtained, which include a total absence of the flicker which has heretofore seldom been dissociated from two-color additive processes.

The Morgana Color Process was invented by Lady Williams of Pontyclum, South Wales. This process we are informed, does not parallel the advantages of three color systems, but has these major distinguishing features:

1. Regular panchromatic reversal film is used.
2. Duplicates may be made just as from panchromatic reversal film exposed for black and white movies.
3. Any Filmo lens may be used. The filters in the camera are behind the lens seat.
4. Pictures may be taken under adverse light conditions. Merely open the lens one stop to allow for the two-color filters.
5. Screen pictures 10 feet wide may be shown with a Filmo projector.

The Bell & Howell Company states: "The disadvantages of the Morgana Process are less than those of any other two-color additive process. Color rendition, while not so faithful as by a three-color process, is nevertheless very pleasing and artistic. Slight fringing is prevalent with close-ups in fast motion, but is not considered objectionable. In any consideration of this process we must, of course, keep in mind its indubitable advantages of great photographic latitude, large screen images, and duplicate prints."

◆

Enter the Audiographers

(Continued from page 10)

man a renewed interest in his work: if he were a member of the American Society of Audiographers, he would have definite professional standards to which he would consciously strive to adhere; if he were not a member of the American Society of Audiographers, he would have ever before him such membership as a goal to be striven for. Thirdly, by bringing the individuals directly responsible for recording the industry's output together, such an organization would be of immense value to the industry by virtue of the more facile interchange of ideas, methods and experiences. And, like the American Society of Cinematographers, it would become the proving ground for new equipment and methods in Audiography, and the starting-point for much of the artistic and technical research in the field of practical Audiography that is so urgently needed.

The greatest needs of the motion picture industry today are generally conceded to be improved morale among its workers, and greater cooperation between all of the members of its body politic. We have seen what the American Society of Cinematographers has done in its field in meeting both these needs; the American Society of Audiographers could do as much in its own field. We can be sure of the whole-hearted cooperation of the Cinematographers. They have shown us the way—shall we not follow?

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BRULATOUR BULLETIN

What's What EASTMAN FILMS *Who's Who*

IN KANSAS AND OTHER FOREIGN FIELDS

M-G-M has sent two of their crack cameramen into foreign fields for backgrounds. Charlie Clarke is scorching his dogs on the hot plains of Kansas shooting wheat and wheat and corn and corn. Johnny Mescal, in the meantime, is chasing all over Europe and lining up some very unusual background shots, which will be seen back of la Shearer, Crawford, Davies, Gable and other M-G-M luminaries.

Whispered information just slipped in over the wire to the effect that Charlie Van Enger and Joe Valentine are scheduled for early return to Europe to resume their work on special backgrounds for Fox. Both of these boys were over there last year, and much of their work has been seen in recent Fox productions.

Hot Soup

THEY are preparing a special batch of "hot soup" at the M-G-M plant preparatory to receipt of the first shipment of negative which Clyde DeVinna has shipped in from the Van Dyke Company, now shooting "Eskimo" in Alaska. First consignment is expected here about July 20th.

What the Cameramen Are Doing to Keep Hollywood on Top

Kurrle in Canada:

As expression of his appreciation for their great work during his busy past season, Bob Kurrle is host to his camera staff on a real vacation, which at this moment seems to be flourishing very nicely, thank you. The boys are about a hundred miles north of Vancouver, and a letter comes from Bob describing the length and size of the fish they are catching. Some details of the letter are slightly confusing, but we gather the important fact that excellent bait may be purchased at about $4.20 a bottle.

Polito to New York

Sol Polito, who has just finished shooting "Three on a Match," leaves this week-end for New York on a trip combining business and pleasure. The chances are Sol will shoot a quick glance at "Central Park." Expected back in Hollywood about August first.

Milton Cohen North

This Saturday night all the little magazines will be locked in their little closets in the First National camera building, and Milton Cohen will toss the key out the window and an hour later be aboard the boat in Los Angeles harbor, from whence he sails to San Francisco and other northern points, with side trips to Lake Tahoe, Yosemite, etc. Mrs. Cohen will direct the itinerary.

Garmes—"Smilin' Through"

Ordinarily, (frankly) we get our first thrill out of seeing a new production go into work in contemplation of the footage of Eastman super-sensitive negative that will be used in it. From time to time there are, however, exceptions: "Smilin' Through" is one of them. We remember this charming, lovely story which came to the screen with another dainty star about ten years ago. Now it's the vehicle for Miss Norma Shearer, directed by Sidney Franklyn and photographed by Lee Garmes. This triumverate on this production spells box office success regardless . . . . of box office depression.

Marsh Back to M-G-M

Ollie Marsh has folded his umbrella —"Rain" is in the can—and Ollie joins forces with that merchant-director, Chuck Reisner, on the M-G-M production of "Father and Son," which will feature young Jackie Cooper.

Hal Rosson Finishing

Hal Rosson is completing production on the Monta Bell production with Jack Gilbert, "Downstairs;" scheduled to start another at the M-G-M plant early in July.

Haller to Paramount

Ernie Haller has been sold down the river for one picture because of the closing at Warner Brothers-First National. He sets up his camera next week for one picture at Paramount, and is scheduled to return to the Burbank lot the first week in August.

Dickering For Gaudio

At the moment a major studio and the largest independent producer are dickering for the services of Tony Gaudio, who has just completed "Tiger Shark" for Warner Brothers-First National. One of the big bosses of the Burbank plant expressed to us his enthusiastic delight with the character of the photography achieved by Gaudio on "Tiger Shark." It is our guess that Tony's next assignment will be with the major plant.

Chinese Operas

A brace of Chinese operas go into production immediately. "The Bitter Tea of General Yen" starts this week at the Columbia Studios with Joe Walker at the camera.

Folsey to Start

GEORGE Folsey, who has been with Paramount (Long Island) New York since he was a little boy, is scheduled to take the camera on an early production at the Paramount West Coast Studios. Meantime George has been doing wonders with his golf score. When he arrived here from the east a month ago he was clicking Brentwood and Riviera around 84: now his score card totals 96s and 98s—that's improvement!

At Fox Hills the Chinese mystery play, "Chandu" is scheduled to start very shortly, and quite appropriately—James Wong Howe—the Scandinavian cameraman, will look after the photography.

Chick McGill East

Along with other cameramen who have treked east for their vacation is Chick McGill, who has leave of absence from the Warner Brothers-First National plant until the first week in August.

Kline With Hawks

Benny Kline is at the Camera for Howard Higgin, whose production, "The Thirteenth Man," gets under way at Columbia this week.

Mohr Finishing

Hal Mohr is winding up the photography of William K. Howard's production, "The First Year" at Fox Hills. Next assignment for Hal at the same studio comes up in about ten days.

Item:

Ernie Palmer is again bringing "ah's" and "oh's" from the boys in the projection room while they view the rushes of "After the Rain," which Jack Blystone is directing at Fox.

Hansen Returns to Fox

We are unofficially advised that Ed Hansen, formerly chief of the sound department at the Fox Movietone Studios, returns to the old job on July eleventh, at which time he will take full charge of the department. Congratulations are in order to Hansen—and to Fox.

LEO TOVER is turning in some very interesting shots on the George Archainbaud production "Thirteen Women" for RKO.

Cronjager on "Liberty Road"

Some most unusual effect shots are coming from the camera of Eddie Cronjager, who is photographing "Liberty Road" under the direction of Rowland Brown at RKO.

IT'S A BOY AT THE GEORGE CRANE'S—(Consolidated Lab)! Congratulations.

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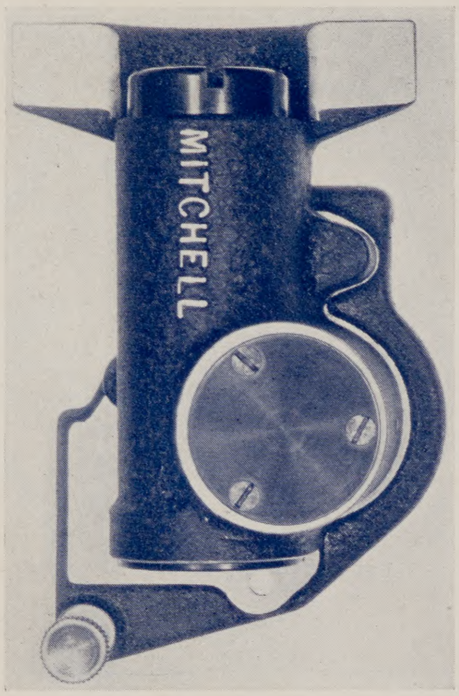

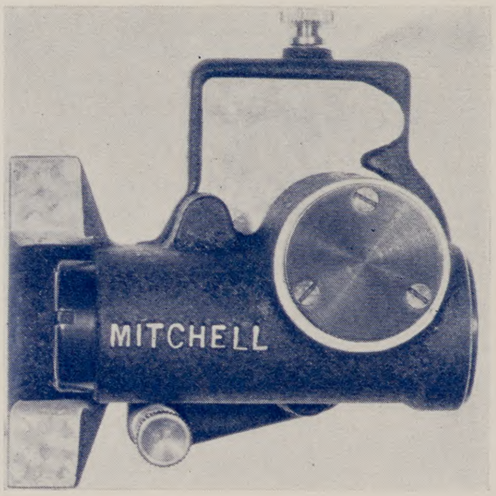

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